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DRAFT REPORT

Supplemental Preliminary Assessment Swan Island Upland Facility

Port of Portland
Portland, Oregon 97209

December 2006

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

NEWFIELDS

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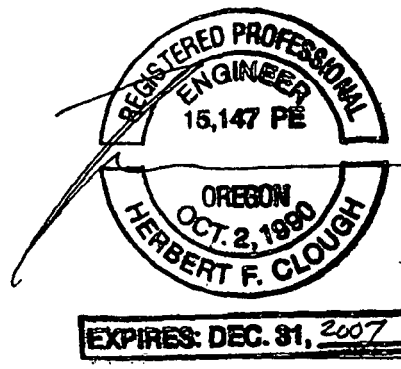
Respectfully submitted,



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Executive Summary

This Supplemental Preliminary Assessment (Supplemental PA) on historical facility use documents, as completely as practicable, the Swan Island Upland Facility (SIUF) history of development and operations and provides background information that supports the scope of the Remedial Investigation. A Preliminary Assessment (PA) was conducted in 1990 by the Oregon Department of Environmental Quality (DEQ) for the site, which was then known as the Port of Portland Ship Repair Yard. This Supplemental PA updates information contained in the DEQ PA and also identifies parties potentially associated with contaminated areas of the SIUF. This Supplemental PA satisfies a requirement in the Scope of Work outlined in the July 24, 2006 Port of Portland- (Port) DEQ Voluntary Agreement for Remedial Investigation (RI), Source Control Measures, and Feasibility Scope of Work.

The Agreement divides the SIUF into three operable units (OU). Figure 1 shows the location of the SIUF and Figure 2 shows the boundaries of each OU. A general description of each OU is presented in Section 1.3.

Figure 3 illustrates major property ownership and development activities for the SIUF, beginning in 1922 when the Port purchased Swan Island from the Swan Island Real Estate Company. Prior to that time, Swan Island was a periodically flooded sand bar and marsh.

After purchasing the island, the Port initiated a project in 1923 to relocate the main navigation channel to the west side of the island. This project was referred to as the West Swan Island Project. River sediments dredged as part of this project were deposited on Swan Island to raise the surface elevation and construct a causeway connecting the island to the eastern shore of the river. This filling readied the island for development into the first Portland airport. Airport construction was completed and operations started in 1931. The airport operated until 1941 when it was relocated to Northeast Portland.

In 1942, the U.S. Maritime Commission (Maritime Commission) entered into an agreement to lease approximately 250 acres of Swan Island from the Port. The Maritime Commission then contracted with Kaiser Company, Inc., for the construction and operation of a shipbuilding facility on the northwest end of the island. Kaiser's facility construction efforts included significant changes to the island's infrastructure and the development of a series of structures used to support their shipbuilding activities. Kaiser launched its first ship in the same year and continued operating the shipyard until 1945. At that time, the Port granted an extension of the Maritime Commission's lease. The war years were one of the most productive periods of operation of the shipyard, with the manufacture of 153 ships by war's end.

The Maritime Commission transferred administrative functions of the facility to the War Assets Administration (WAA) in 1946. The WAA in turn sub-leased the buildings and facilities to various tenants, including CBI, a ship breaker which scrapped 15 to 209 vessels at the yard.

In 1947, the WAA declared the shipyard assets to be surplus and advertised them for sale. Following extensive negotiations, the Port subsequently purchased the shipyard assets from the WAA in 1949.

In 1950, the Port initiated development of the Swan Island Ship Repair Yard, later known as the Portland Shipyard (PSY). Through 1995, the Port expanded the PSY capabilities including addition of

dry docks (Dry Dock 2 in 1950, Dry Dock 3 in 1961, and Dry Dock 4 in 1979); construction of the first ballast water treatment plant (BWTP) in 1973; development of berths along the Willamette River; and construction of a new BWTP in 1979. During the time of the Port's ownership, it contracted with various companies to provide needed ship repair services and leased space to a number of tenants who supported ship repair activities and performed other industrial operations.

In 1996, the Port entered into an operating agreement with Cascade General. While the Port retained ownership of the shipyard, operations were transferred to Cascade General who took responsibility for contractor/tenant management. The construction of a plant to treat storm water (i.e., water generated from raising the dry docks) from the dry docks was completed in 1997. In 2000, the Port sold the portion of the shipyard that is defined in the Agreement as OU1 to Cascade General. The Port retained ownership of the property referred to as the North Channel Avenue Fabrication Site and a portion of the employee parking lot (referred to in the Agreement as OU2), and the properties located at 5420 North Lagoon Avenue and the adjacent parcel that extends to the northeast to the ordinary high water line for Swan Island Lagoon (referred to in the Agreement as OU3).

The historical review documented in this Supplemental PA identified several potential areas of concern. All of these potential areas of concern have been or are being addressed by completed or ongoing investigations except for the following:

- Two power substations with oil-filled equipment from the Kaiser shipyard period formerly located on OU1 (scheduled for investigation in 2007 during phase II of the RI for OU1);
- Four power substations with oil-filled equipment from the Kaiser shipyard period formerly located on OU2; and
- One power substation with oil-filled equipment from the Kaiser shipyard period formerly located on OU3.

The existence of these former power substations was identified from facility drawings discovered during preparation of the Supplemental PA.

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Acronyms/Abbreviations

ACDP	Air Contaminant Discharge Permit
Agreement	Voluntary Agreement
ARCO	Atlantic Richfield Company
AST	aboveground storage tank
BMPs	Best Management Practices
BWTP	ballast water treatment plant
Cascade General	Cascade General Corporation
CBI	Consolidated Builders, Inc.
CGSRY	Cascade General Shipyard Repair Yard
City	The City of Portland
Committee	Safety and Pollution Control Committee
CUB	central utility building
CWI	Columbia Wire and Iron
DEQ	Oregon Department of Environmental Quality
EPA	Environmental Protection Agency
ER	Environmental Review
ESA	environmental site assessment
FS	Feasibility Study
GSA	General Services Administration
Kaiser	Kaiser Company, Inc.
LST	tank landing ship
Maritime Commission	The United States Maritime Commission
NFA	no further action
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
OSPIRG	Oregon Student Public Interest Research Group
OU	operable unit
OWR&N	Oregon-Washington Railroad and Navigation Company
PA	Supplemental Preliminary Assessment
Pac-Mar	Pacific Abrasives
Parsons	The Ralph Parsons Company
PCBs	Polychlorinated Biphenyls
Port	The Port of Portland
ppm	parts per million
PRP	potentially responsible party
PSY	Portland Shipyard
RI	Remedial Investigation
Shaver	Shaver Transportation
SIUF	Swan Island Upland Facility
SOPs	standard operating procedures
Supplemental PA	Supplemental Preliminary Assessment
SPCC	Spill Prevention Control and Countermeasure
TPH	total petroleum hydrocarbons
TSS	total suspended solids

UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
UST	underground storage tank
WAA	Water Assets Administration
WSI	West States Incorporated

1. Introduction

1.1 Purpose

The Port of Portland (Port) entered into a Voluntary Agreement (Agreement) for Remedial Investigation (RI), Source Control Measures, and Feasibility Study (FS) with the Oregon Department of Environmental Quality (DEQ) for the Swan Island Upland Facility (SIUF) on July 24, 2006. The Agreement covers the Cascade General Ship Repair Yard (CGSRY), formerly known as the Portland Shipyard (PSY), and certain adjacent uplands owned by the Port on Swan Island. Together, the CGSRY and Port-owned uplands are referred to in the Agreement as the SIUF. Figure 1 shows the location of the SIUF. The SIUF was previously referred to by DEQ as the Portland Shipyard, ECSI No. 217.

The purpose of this Supplemental Preliminary Assessment (Supplemental PA) on historical facility use is to: (1) document as completely as practicable the SIUF history of development and operations; (2) provide background information to support the scope of the RI; and (3) identify parties potentially associated with contaminated areas of the SIUF. This report satisfies a requirement in the Agreement Scope of Work requiring the Port to submit a Supplemental PA on historical facility use.

1.2 Scope

The scope of the Supplemental PA includes historical property ownership, development, and operations associated with the SIUF. The Supplemental PA focuses on historical operations and activities. The Supplemental PA does not summarize prior site investigations or remedial actions, as they have been summarized in previous documents submitted to DEQ (Bridgewater Group 2000c, 2001, 2002, 2003, and 2006).

1.3 Facility Definition

The Agreement divides the SIUF into three operable units (OU). The boundaries of each OU are shown on Figure 2, and a general description of each OU is presented below. In defining the SIUF boundaries, the Agreement specifically excludes the following from the SIUF:

- Adjacent sediments, submerged lands, and submersible lands up to the ordinary high water line that were part of the former PSY.
- Dry docks and storm water conveyance systems owned, operated, and maintained by Cascade General Corporation (Cascade General); permitted waste discharges; and other Cascade General activities and operations over which the Port has no control.
- Berth 311 uplands as defined in the Port's February 17, 2004 no further action (NFA) request submitted to DEQ (Port, 2004; Bridgewater Group, 2005a and 2005b); DEQ issued an NFA for the Berth 311 uplands on December 19, 2005 (DEQ, 2005b).

1.3.1 Operable Unit 1 (OU1)

OU1 consists of approximately 57 acres of upland at the CGSRY. OU1 is currently owned by Vigor Industrial LLC.

1.3.2 Operable Unit 2 (OU2)

OU2 consists of approximately 37 acres of upland located along North Channel Avenue on the west side of Swan Island. OU2 is currently owned by the Port. OU2 was formerly referred to as the North Channel Avenue Fabrication Site.

1.3.3 Operable Unit 3 (OU3)

OU3 consists of an approximately 1.7-acre upland parcel located at 5420 North Lagoon Avenue and an adjacent approximately 0.3-acre parcel that extends northeast to the ordinary high water line for Swan Island Lagoon. OU3 is currently owned by the Port.

1.4 Methodology and Report Organization

This Supplemental PA on historical facility use is based upon extensive research into publicly-available historical records from governmental sources including: the Port of Portland, DEQ, Environmental Protection Agency (EPA), United States Maritime Commission (Maritime Commission), U.S. Navy, War Assets Commission, and other federal and private agencies. It builds upon RI documents previously provided to DEQ. To the extent of any factual inconsistencies, the Supplemental PA supersedes prior RI Work Plan documents. The PA may be further supplemented in the future to the extent additional critical site history information is identified.

Sections 2 through 6 of the Supplemental PA present essentially a chronological history of the SIUF, divided by significant changes in operation and/or ownership. These divisions include:

- Swan Island Municipal Airport (pre-1922 to 1941) – Section 2;
- Military (1942 to 1949) – Section 3;
- Port ownership and operation of the shipyard (1950 to 1995) – Section 4;
- Cascade General operation and ownership of the shipyard (OU1) (1996 to present) – Section 5; and
- Port ownership of the non-shipyard areas of the SIUF (OU2 and OU3) (1996 to present) – Section 6.

Each of Sections 2 through 6 has a similar structure, beginning with a historical narrative discussing the development and activities associated with the SIUF during the period and followed by two

summary subsections listing the significant users of the SIUF and potential areas of concern. Figure 3 is a historical timeline summarizing the overall development of Swan Island from 1920 to the present.

Section 7 is a comprehensive summary of potential areas of concern identified in Sections 2 through 6. Where applicable for each potential area of concern identified, references are provided to the RI documents that describe how the area of concern has been addressed.

The final two sections list identified potentially responsible parties (PRPs) and orphan PRPs associated with the SIUF.

2. Swan Island Municipal Airport (Pre-1922 through 1941)

2.1 Introduction

Construction of the airport represents the first development of Swan Island.

2.2 Historical Narrative

2.2.1 Pre-Development History (Pre-1922)

Swan Island was originally a periodically flooded sand bar and marsh within the main channel of the Willamette River. Figure 4 is an aerial photograph looking to the east (upstream) at Swan Island in the early 1920s. At that time, the main navigation channel was located on the east side of the island, between the island and Mocks Bottom. The Willamette River on the west side of the island was too shallow for ship navigation.

In 1919, the Port proposed filling lowland areas on the east side of the base of Swan Island and creating a 1,600-foot wide navigation channel on the west side of the island.

The Port purchased Swan Island from the Swan Island Real Estate Company on January 3, 1922.

2.2.2 Pre-Airport Development (1923 to 1927)

In 1923, the Port initiated planning for the West Swan Island Project with the intent of relocating the main channel of the Willamette River from the east side to the west side of the island. Over 40 million cubic yards of sediment were dredged as part of the project (Port, 1932). Some of the river sediments were used to raise the island to 32 feet above mean low water. Figure 5 is an aerial photograph taken in the 1920s looking to the west (downstream) at Swan Island during the time that river sediments were being dredged from west of the island and placed on Swan Island. The channel along the west side of Swan Island was opened to navigation at the end of 1926 (Port, 1928).

In 1927, dredged river sediments were used to raise the south end of Mocks Bottom and to construct a causeway that connected the upstream end of the island to the east shore of the mainland. This made a peninsula of the island and created a still water lagoon of the east channel (the lagoon and causeway are shown on Figure 6). That lagoon is now referred to as Swan Island Lagoon.

2.2.3 Swan Island Municipal Airport (1927 through 1941)

2.2.3.1 Airport Development

In 1926, the Port began construction of a municipal airport on Swan Island. Airport construction was completed and operations began in 1931. The site served as the municipal airport until 1941, when the need for a longer runway and larger facilities posed a challenge to the island's limited capacity and drove relocation of the airport. As a result, airport facilities were moved to Northeast Portland along the Columbia River to a location known as the Portland Columbia Municipal Airport (part of the current Portland International Airport).

2.2.3.2 Airport Operations

The Swan Island Airport consisted of a series of paved, oiled, and gravel (i.e., cinder) runways; a gasoline control house and plane fueling stations (or pits); hangars; an administration building; and a restaurant. A 1942 Sanborn Fire Insurance map shows air runways and plane taxi strips extended to each side of Swan Island. Aircraft hangars occupied the eastern portion of Swan Island and associated airport buildings were located in what is now the area between N. Dolphin and N. Commerce streets, close to N. Lagoon Avenue (both to the northeast of OU2 of the SIUF). An aerial photograph depicting these features is included as Figure 6. Figure 7 is a 1929 oblique photograph showing the buildings on the airport. Based on review of historical airport drawings and photographs, the only airport facilities that overlapped with the SIUF boundaries were gravel and paved runways. The gasoline control house, hangars, oiled runway, plane fueling stations, administration building, and restaurant were located on adjacent properties. Figure 8 illustrates the layout of the original Portland airport in 1932 with respect to the approximate SIUF boundaries.

2.3 Facility Users – Airport Tenants and Contractors

During the airport's tenure, the Port contracted for certain operations and leased areas of the airport. Appendix A summarizes known information about tenants and contractors at the Swan Island Municipal Airport.

2.4 No Potential Areas of Concern

Figure 8 shows that the only airport facilities located on the SIUF were gravel and paved runways. Therefore, no potential areas of concern were identified for the SIUF related to the period of airport operations.

3. Military History (1942 through 1949)

The military history of the shipyard has been pieced together from information the Port has been able to assemble from a variety of different sources. There are, however, substantial information gaps for the relevant period. As additional substantive information is discovered in the future, the military history of the shipyard will be updated.

3.1 Background

The federal government became involved with shipbuilding in Portland Harbor prior to U.S. entry into World War II, when a shipbuilding program to rebuild the nation's merchant fleet was initiated in 1939. In January 1941, the Navy assumed supervision of all shipbuilding and ship conversion in Portland Harbor with the creation of the Portland office of the Supervisor of Shipbuilding. The Supervisor of Shipbuilding was specifically tasked with overseeing Navy-contracted construction throughout the Harbor. Much of the early work focused on construction of ships for use in the Lend-Lease program serving America's allies. Later efforts were largely focused on overseeing the construction of Liberty Ships, T2 tankers, and minesweepers at the various shipyards in and around Portland.

With war preparation efforts underway, the Maritime Commission designated three major shipyards in the Portland area to accommodate program needs. These facilities included Oregon Shipbuilding Corporation (commenced in 1941) located north of the Port's Terminal 4, and Kaiser Shipbuilding Corporation facilities (commenced in 1942) on Swan Island and at Vancouver, Washington. The Maritime Commission added Gunderson Brothers Engineering, Portland Shipbuilding Co., and Soule Steel Co. in Portland Harbor to its list in 1942.

3.2 Historical Narrative

3.2.1 Property Lease to U.S. Maritime Commission

In March 1942, the Maritime Commission entered into an agreement with the Port to lease approximately 250 acres of Swan Island (Port, 1942). The lease area included all of Swan Island, not just the areas within what is now the SIUF. Under the lease, the Port had 30 days to remove any equipment and dismantle any facilities used at the airport occupying the island. After that time the lease granted the Maritime Commission permission:

> ...to dismantle and destroy and remove from the lease premises any and all buildings, structures, foundations, pavements, piles, conduits, and improvements of every kind and nature located on the leased premises, and to appropriate and use for its own purposes any material so salvaged, or to dispose of said material for its own account and benefit and to alter the grade of the leased premises to make them suitable for the purposes of the Lessee under this lease (Port, 1942).

More specifically, the Maritime Commission agreed to construct:

A shipyard with the ordinary and usual buildings, structures, improvements, necessary railroad trackage, roadways and the usual and necessary appurtenances to or for such a shipyard (Port, 1942).

According to the agreement, any facilities constructed in connection with the Facilities Contract remained the property of the Maritime Commission. The Maritime Commission could "grant use and occupancy of the leased premises" to any additional entity having contracts with the Maritime Commission for construction of vessels. The lease did not require the Maritime Commission to restore the property to its pre-lease condition upon termination in areas where improvements had been made, unless the Maritime Commission removed facilities constructed during its tenure. In such instances, they would restore the property "to as good a condition as they were prior to the acquisition, construction or installation of such facilities" (Port, 1942).

The U.S. Maritime Commission subsequently contracted with Kaiser Company, Inc. (Kaiser) for the acquisition, construction, and operation of shipyard facilities.

3.2.2 Kaiser Shipyard Construction and Operations

Kaiser initiated construction of the Swan Island shipyard for the Maritime Commission in 1942. Contract data for the shipyard indicates that it was constructed for $22 million and included eight shipways, one outfitting dock, and one 14,400-ton dry dock (Dry Dock 1) provided by the Navy under a lease (U.S. Navy, 1946g). The shipyard also included ancillary support structures and a series of marine berths. Some of the structures were remnants of the former Swan Island Airport that were converted for use at the yard.

The Swan Island shipyard was designed as a straight-line flow shipyard:

> They had large platens at the head of the ways for preassembly and the storage of the preassembled units. Immediately behind them was the assembly building from which came the subassemblies to be made into large units on the platens. Behind the assembly building was the plate fabricating shop, and behind that the racks for plate storage (Lane, 1951).

A general discussion of the shipyard buildings, berths, dry dock, shipways, and ancillary facilities located within the SIUF boundaries follows.

3.2.2.1 Buildings

Figure 9 is a facility layout map based on conditions in 1945 showing shipyard buildings. Figure 10 illustrates those shipyard buildings that were located within the SIUF boundaries. Little is known about the buildings beyond names and general uses. The following table summarizes the Kaiser-era buildings that were located on the SIUF and their respective uses. Appendix B provides a detailed list of specific building uses over time. Where known, information about operations associated with these facilities is included.

Shipyard Building	Building Name	Description	Use
3	Mold loft[1]	45,500 sq. ft., two-story structure with rail service and loading dock; separate boiler room	Used as template layout area for patterns for shaping steel
4	Assembly building	290,000 sq. ft. w/ 6-inch concrete slab floor; rail service outside structure; electrical substations within	Central assembly location (further described below)
5	Oxygen house	Unknown	Oxygen supply
6	Compressor house	4,000 sq. ft. one-story structure w/ 6-inch concrete slab floor; no plumbing or heat	Compressor equipment and piping
7	Field office	20,400 sq. ft. two-story structure with basement and vault; heating supplied by oil-powered boiler in basement	Administrative offices; first aid unit
8	Acetylene building	2,400 sq. ft. one-story concrete structure w/ 4-inch concrete slab floor; loading dock	Acetylene generation to supply cutting torches; building utilized four carbide (H_2) units; carbide stored in drums; drums moved by hoist
9	Machine shop[1]	37,000 sq. ft. one-story structure w/ balcony and office area; concrete floor; spur track into building; plumbing & heat (electric) only in office area; utilized 1,000 gallon underground storage tank for gasoline; transformer located adjacent to building	Machining of tools and parts
10	Pipe shop and welding	70,000 sq. ft. one- and two-story structure w/ office area; asphalt & concrete floor; two open craneways; rail spur through building; no heat	Welding and pipe construction
12	Carpenter shop	6,000 sq. ft. one-story structure w/ concrete foundation; heated by a floor oil burner	Carpentry
20	Substations	Outdoor	Electrical facilities
21	Boiler erection building	Two-story structure	Construction of vessel boilers
23	Lunchroom[2]	Unknown	Employee break area
29	Substation	Unknown	Electrical facilities
30	Way End buildings	Series of eight buildings at the end of each shipway; each building contained its own substation within; construction unknown	Various uses including temporary storage of subassemblies prior to placement/fitting on vessel
31	Utility buildings	Two buildings – one adjacent to Way End Building 30-3 and one adjacent to 30-6; two-story structures (construction unknown)	Lunch room, toilet facilities, offices, locker rooms
35	Boiler House	1,700 sq. ft. one-story structure w/ concrete floor; 12,000 gallon underground storage tank for fuel oil; no plumbing or heat	Boiler storage
37	Motor Shed	Unknown	Unknown
38	Equipment maintenance	Unknown	Repair and maintenance on for equipment
40	Lumber yard office	Unknown	Administrative
43	Pipe assembly and fitting building	7,000 sq. ft. one- and two-story structure; asphaltic-concrete floor; electric heaters; no plumbing	Pipe assembly and fitting
53	Salvage depot with a shop and offices	Unknown	Salvage, shop & offices

Shipyard Building	Building Name	Description	Use
56	Machinery storage[1]	39,500 sq. ft. structure divided into 3 distinct sections; concrete & asphalt floor; boiler room; rail spur; offices	Machining of tools and parts
76	Storage platforms	Series of eight platforms (construction unknown)	Platforms to support subassemblies
77	Outfitting building[3]	26,500 sq. ft. two-story structure w/ 6-inch concrete slab floor; 3-ton hydraulic freight elevator; heated by electric heaters and floor oil circulating devices	Outfitting
80	Outfitting building #2	3,500 sq. ft. two-story structure w/ concrete foundation	Outfitting; marine machining; offices; locker rooms

[1] These buildings straddle the boundary of the SIUF and an adjacent property.

[2] In 1948, a small building was located on the northern portion of OU3. Based on review of facility maps for the Kaiser Shipyard, this building may have been the lunch room shown on Figure 9, or a guard house or restroom facility for shipyard workers. Aerial photographs indicate the building was removed prior to 1955.

[3] This building was also known as the "Navy Conversion Building" and Outfitting Building #1

The largest of the shipyard buildings within the SIUF was the Assembly Building, also known as Building 4. Building 4 was located northeast of the shipways and consisted of 11 bays. Building 4 served as the central location for assembling the Type T-2 tanker, which consisted mainly of steel fabrication through welding and cutting. Divided into 11 bays, the building was dedicated to specialized work including preparation of corrugated bulkheads, side shell sections, tank top sections and varied bulkhead and deck sections. Building 4 was originally equipped with 11 overhead bridge cranes that allowed structural steel and sheet metal to be brought into the east side of the building where they were assembled into steel ship sections. The ship sections were then moved out of the west side of the building to the shipways where the Type T2 tankers were constructed. When Building 4 was constructed, it was open on the east and west sides.

3.2.2.2 Berths

During this period, berths were present only on the lagoon side of the SIUF. Berths 1 through 8 were constructed along the northeast side of Swan Island, extending from what is now Berth 301 past Berth 305 to Berth 308. Berth 8 was the last of the berths constructed and was located in approximately the same place as the current Berth 308. The berths along Swan Island Lagoon were outfitting piers with crane service. Figure 11 is an aerial photograph taken in 1943 that shows ships under construction in each of the eight shipways and ships docked at Berths 3, 4, and 5. Figure 12 is an oblique aerial photograph showing the berths and shipways. Figure 13 is an oblique aerial photograph that shows the berths (Berths 1 through 8) that were constructed along Swan Island Lagoon.

3.2.2.3 Dry Dock

Kaiser constructed a dry dock, YFD-69, for the Navy at its Vancouver shipyard and transported it to Swan Island in early 1945. Figure 14 is a 1945 photograph showing a ship in the dry dock. The Navy loaned the dock to the Maritime Commission who in turn, sub-leased it to Kaiser (Bureau of Yards and

Docks, 1947). The Navy's Bureau of Yards and Docks gave the Maritime Commission $2.5 million to construct supporting facilities for the dry dock (Bureau of Yards and Docks, 1947). The first ship docked at YFD-69 on April 29, 1945 (U.S. Navy, 1945a). Just prior to the ship's arrival, the Navy submerged the dock "to clear the decks of all shavings and loose debris" (U.S. Navy, 1945a).

The Supervisor of Shipbuilding for Portland recommended the use of additional wet sandblasting and "hot plastic painting" equipment in ship repair around 1945 (U.S. Navy, 1945b). The Supervisor issued the suggestions in an effort to reduce the time vessels spent in dry dock and speed repair work, overall, at overburdened dry docks (U.S. Navy, 1945b). These discussions listed Kaiser's operation and the Navy's YFD-69 dry dock as an integral component of ship repair work in Portland Harbor and the need to maintain such a facility.

Kaiser continued to sub-lease the dry dock after the transfer of the shipyard's administration from the Maritime Commission to the War Assets Administration (WAA) in 1946. When the WAA declared the shipyard surplus in February 1947, however, it excluded the dry dock (Bureau of Yards and Docks, 1947). Consolidated Builders, Inc. (CBI) assumed the sub-lease of the dry dock when it began ship dismantling operations at the shipyard in October 1947. The WAA terminated that sub-lease in August 1949, but the dry dock remained in use (Port, 1957).

3.2.2.4 Shipways

The shipways were excavated from the north end of Swan Island to serve as the assembly area and launch facilities for the newly constructed ships. Wooden pilings were installed to support the ships during construction and launching (see Section 4.2.1 for discussion of the shipway abandonment).

3.2.2.5 Utilities

Kaiser's development of the shipyard for the Maritime Commission included a sanitary and storm drainage system, an electrical distribution system, and a potable water system (Kaiser, 1945). A list of "Yard Development Costs" prepared in 1945 (as part of an appraisal of government-owned structures) for the shipyard included the following projects and facilities: dredging for shipways and outfitting dock, storm and sanitary sewage drainage, yard paving, and railroad trackage (U.S. Maritime Commission, 1945a).

A review of Kaiser drawings dated 1942 indicates the storm drain system discharged to the Willamette River and Swan Island Lagoon. Catch basins on the piers and shipways discharged individually directly to the river or lagoon. Building and area drains combined to discharge to nine outfalls on the river side and eleven outfalls on the lagoon side. In some cases, sanitary and storm sewers were combined (Port Drawings, SI 1942 1005).

Kaiser drawings from 1942 show the sanitary sewer discharging to the Willamette River via seven outfalls (Port Drawings, YA 1942 0503). The drawing also shows a "future" interceptor sewer running along the river side of the island and connecting to a proposed city sewer beneath the causeway connecting the island to the mainland.

Figure 15 shows an electrical plan for the shipyard from 1942 (Port Drawing YA 1952 0503). "Power substations" identified on the drawing are highlighted on the figure. It should be noted that the symbols depicted adjacent to the former shipways on OU1 were used to designate electrical equipment within the Way End Buildings. However, since the buildings themselves were small, the symbols cover the entire structure. Based on review of an electrical plan of the Way End Buildings, the area of the each of the substations was interpreted to be approximately 9 square feet (Port Drawing YA 1942 1001 0103).

In 1948, the WAA executed an agreement with Portland General Electric (PGE) for the sale of all of WAA's electrical equipment, which included substations on Swan Island (WAA, 1948b). The equipment list attached to the agreement indicates certain oil-filled transformers manufactured by General Electric (GE) contained "Pyranol" and that one transformer manufactured by Allis-Chalmers contained "Chlorextol". Both Pyranol and Chlorextol were trade names used by GE and Allis-Chalmers, respectively, for their PCB-containing dielectric fluids. Several of these transformers were located in substations on or immediately adjacent to the SIUF. In addition, the equipment list includes potheads and indicates other transformers were oil-immersed self-cooled (OISC) and that some circuit breakers were oil-filled. The type of fluid associated with that equipment, however, was not reported. Figure 15 shows the substations that contained oil-filled transformers, circuit breakers, and/or potheads. The following table summarizes these Kaiser-era substations and what known equipment, if any, was utilized.

Location	Substation	Equipment	Status
OU1	B	4 Pyranol transformers 3 oil-filled circuit breakers 4 potheads	Extant in 1981
	D	unknown	unknown
	E	switches & wire	unknown
	F	insulators	unknown
	J	unknown	Reactivated in 1951; presently Substation 4
	K	unknown	Became Substation 5, which was relocated in the 1980s
	L	1 Pyranol transformer	Removed
	Way End Building 30-3	1 OISC transformer Switches & wire	Removed
	Way End Buildings 30-1 to 30-2 & 30-4 to 30-8	switches & wire	Removed
OU2	A	1 OISC transformer 6 oil-filled circuit breakers 5 potheads	Removed in 1968
	P	3 OISC transformers 1 pothead	Removed
	Q	4 unknown transformers 3 OISC transformers 1 pothead	Removed
	R	1 OISC transformer 1 pothead	Removed in 1961
OU3	M	2 Pyranol transformers 1 OISC transformer	Removed

Location	Substation	Equipment	Status
Adjacent Property	G	3 Pyranol transformers 1 pothead	Adjacent to NW corner of Building 2; removed in 1968
	T	3 Pyranol transformers 1 Chlorextol transformer	Adjacent to former machine shop at intersection of N. Dolphin & N. Channel Ave; removed in 1961
	X	1 Pyranol transformer 3 OISC transformers 1 pothead	Located proximal to intersection of N. Channel & N. Commerce St. removed in 1962

3.2.2.6 Ancillary Facilities

As the assembly line nature of shipbuilding placed a premium on speed of assembly, ship time on the ways was gradually reduced from 149 days to 41 days. To maintain such a work pace, Kaiser reached a peak employment figure of 28,000 workers. To accommodate the workers, Kaiser obtained permits from the Army Corps of Engineers to construct a temporary pontoon and trestle viaduct on July 25, 1942. A parking lot was subsequently constructed in Mocks Bottom for employee vehicles providing access to the shipyard via a pontoon bridge (see Figure 12). A ferry service was also initiated from the west bank of the Willamette River to Swan Island to transport workers to the yard.

3.2.2.7 Kaiser Operations

Few specifics of Kaiser's operations are currently known other than that the general operations conducted at the shipyard involved building ships for federal government for war-time use. From an initial six-ship contract with the Navy (for the conversion of tanker hulls to Navy oilers), the Swan Island shipyard evolved into one of the Maritime Commission's most productive T-2 tanker yards. The first ship was launched on October 24, 1942. By the war's end, 153 ships had been assembled at the Swan Island shipyard. Production at the Swan Island shipyard accounted for a significant portion of the 27 million tons of ships produced by American yards in both 1942 and 1943. As of June 30, 1945, approximately 10,570 people were employed at the Kaiser yard, 1,000 of which were engaged in ship repair activities. The last ship was launched on November 28, 1945 (U.S. Navy, 1946g).

3.2.3 Post-War Activities and Operations

As Portland Harbor had become a fully integrated defense-effort industrial complex during WWII, the conclusion of the war led to a transition for the shipyards. These yards that were once dedicated to construction of ships became refocused upon ship repair and dismantling. Navy and Maritime Commission contracts were competitively bid and consistently awarded to local contractors, including those operating at the shipyard.

3.2.3.1 Maritime Commission – Kaiser Agreements

The Maritime Commission notified the Port on August 8, 1944, that it had decided to extend the term of its lease another seven years, expiring on March 9, 1952 (U.S. Maritime Commission, 1944). The Port granted the extension in December 1945 (Port, 1945). The Maritime Commission leased Swan Island until it transferred the shipyard's administration to the WAA in 1946. WAA assumed responsibility for the Maritime Commission's lease of the facility from the Port.

Over the course of their relationship, Kaiser and the Maritime Commission executed "Vessel Contracts" for the production of T-2 tankers at the facility. One such example is a "Vessel Contract" that was executed with Kaiser on March 1, 1945, approving the construction of 55 tankers on behalf of the Maritime Commission (U.S. Maritime Commission, 1945b). The Maritime Commission terminated work on 11 vessels under notices sent to Kaiser on April 20 and August 14, 1945 (U.S. Maritime Commission, 1945b). On October 2, 1945, the Maritime Commission issued an Addendum to the Vessel Contract authorizing payment of compensation to Kaiser for work performed to date on the terminated vessels. The Addendum also served to reiterate the parameters under which work would be conducted by Kaiser.

The Vessel Contract was to expire 60 days from the date of completion of the last vessel to be constructed (U.S. Maritime Commission, 1945b). Significant provisions of the use agreement included:

- Kaiser would "maintain, preserve and protect and, if directed, scrap, dismantle, and store all supplies, materials, vessel machinery and equipment, and vessels now in the Shipyard" acquired for the performance of work under the contract.

- Kaiser's obligation to maintain the shipyard did not include dismantling the shipyard or placing it in standby condition. It did not include repair or replacement "of whatsoever nature" the equipment and improvements at the shipyard unless designated in the "Vessel Contract" of March 1, 1945.

- Kaiser would inventory "all materials, supplies and equipment" acquired for performance of the "Vessel Contract" if required by the Maritime Commission.

- Kaiser would not be liable "for loss of or damage to any property of the Maritime Commission in the Shipyard after delivery of the last vessel to be completed under the Vessel Contract" (U.S. Maritime Commission, 1945b).

On January 1, 1946, the Maritime Commission executed a sub-lease agreement with Kaiser for Swan Island property until December 31, 1946 (U.S. Maritime Commission, 1946a). The agreement authorized Kaiser to make any alterations, repairs, or additions to the property necessary for its uses with permission, but any such improvements would become, at the Maritime Commission's option, either the property of the Maritime Commission or removed at Kaiser's expense (U.S. Maritime Commission, 1946a).

Kaiser and the Maritime Commission subsequently signed another agreement on June 26, 1946, known as the "Lay-Up Contract," where Kaiser agreed to maintain and preserve the shipyard at the

direction of the Maritime Commission (U.S. Maritime Commission, 1946b). More specifically, Kaiser would:

> Place equipment in standby condition, dismantle, store or place under cover any item of equipment where such action is reasonably necessary for its preservation, treat the shipyard facilities with preservative substances; make minor repairs necessary to prevent deterioration, breakdown or loss of any items of shipyard facilities belonging to the Commission . . . (U.S. Maritime Commission, 1946b).

Though signed in June 1946, the contract back-dated its activation to October 1, 1945, to cover "lay-up" work already performed by Kaiser. The agreement would terminate September 30, 1947, unless amended (U.S. Maritime Commission, 1946b).

3.2.3.2 War Assets Administration

As Kaiser negotiated and amended its sub-leases with the Maritime Commission, a new federal agency, the WAA, became involved with management of government-owned facilities on Swan Island. The WAA was established in March 1946 to dispose of government-owned property designated as surplus to the government's needs (National Archives and Records Administration, 1987). In that capacity, the WAA served as an agent packaging properties for sale or transfer to other entities.

WAA-Kaiser Agreements. A December 4, 1946 letter from A. Bauer with Kaiser to C. Mudge with WAA, indicated Kaiser was in possession of a substantial percentage of the land areas, structures, equipment and facilities at Swan Island under the Maritime Commission sub-lease (Kaiser, 1946). Kaiser proposed entering into an interim sub-lease until the WAA was in a position to make a decision on the final disposition of the Swan Island Yard. The interim sub-lease started on January 1, 1947. On May 21, 1947, Kaiser requested that the WAA extend the interim sub-lease through November 30, 1947 (Kaiser, 1947a). The extension was granted by the WAA (WAA, 1947b).

On August 1, 1947, Kaiser notified the WAA that it would discontinue its operations and would withdraw from Swan Island (Kaiser, 1947b). The interim sub-lease was cancelled effective August 31, 1947, although Kaiser stated that it may need to use certain warehouse and other facilities until about October 31, 1947. An October 1, 1947 letter from Kaiser to the WAA indicates that the interim sub-lease was to be replaced with another sub-lease covering a smaller portion of the facilities to be used by a Kaiser affiliate, Consolidated Builders, Inc. (Kaiser, 1947c).

A September 29, 1947 WAA Re-Inspection Fire Protection and Security Report indicates that the facility was practically deactivated, except for a small portion sub-leased to Kaiser for the purpose of dismantling and scrapping ships (WAA, 1947c). The sub-leased portion included the northeast corner of the facility, including approximately one-half of the outfitting dock (i.e., the Swan Island Lagoon Berths).

WAA Disposition of the Shipyard. Late in 1947, the WAA declared the assets at the shipyard to be surplus. Preparing to divest itself of its Swan Island facilities, the WAA advertised the shipyard for sale. The shipyard was touted as a facility "ready to run, equipped and functioning, or for ship repair, conversion, or other marine industrial uses" but WAA admitted the need for rehabilitation of facilities

and/or equipment (WAA, 1946c). The WAA identified the Port as the logical purchaser of the facility; however, the Port's offers to the WAA for the acquisition of the facility were declined. The delay in completing the sale allowed the government continued use of the shipyard through its multiple tenancy program (further discussed below).

WAA Sub-Lease to Consolidated Builders. As Kaiser's relationship with the shipyard came to a close, a Kaiser affiliate, CBI started to operate at the shipyard (Lane, 1951). The WAA authorized its regional directors in September 1946 to execute leases with "shipbreakers" to alleviate a nationwide shortage of metal scrap (WAA, 1948a).

The WAA executed a sub-lease agreement with CBI on October 1, 1947, where CBI sub-leased certain land tracts and industrial equipment at the shipyard and on Swan Island for the purpose of ship dismantling (WAA, 1947d).

Specifically, CBI sub-leased the dry dock basin, the northern half of the outfitting dock, and "Marine Dock" and pipe assembly buildings for the purpose of ship dismantling (WAA, 1947d). A November 26, 1947 document lists equipment that CBI rented from the WAA, including five whirley cranes, one locomotive crane, and equipment located in the carpenter shop, machine shop, plate shop, pipe shop, sheet metal shop, paint department, electrical department, rigging department, and boilermaker shop (WAA, 1947e). Some of the equipment included "dumpster skips", saws, grinders, lathes, drills, welding machines, burning machines, various pipe bending devices and seven sludge pumps. The sludge pumps and pipe bending devices were located in the pipe shop (Building 10) (WAA, 1947e).

Little is currently known about CBI's processes associated with their shipbreaking activities. However, a review of various web-based resources indicates CBI dismantled in the range of 15 to 20 vessels at the yard during their two-year tenure. Approximately 14 of those vessels were tank landing ships (LSTs) that were scrapped at the behest of the U.S. Navy. Issues surrounding management of wastes generated at the CBI facility can be summarized as follows.

A fire prevention survey made of CBI's operations in March 1948 reported several "unsafe" fire conditions (City of Portland, 1948). They included:

- Burning of deck houses and other materials on the pavement near Dry Dock 1 and the outfitting dock in the area where ship dismantling and salvaging occurred;
- Improper disposal of flammable and other combustible waste materials; and
- Leak/escape of oil from fuel storage tanks to the ground and under dock structures.

An annual inspection made of CBI's operations at the shipyard by a WAA safety engineer in September 1948 reported a fire on Shipway #6 that had occurred since the previous year's inspection, but provided no further detail (WAA, 1948g).

Part of CBI's waste management practices included contracting with Shaver Transportation (Shaver) for the disposal of bilge wastes at the oil sump in Rivergate. Shaver's sludge barges collected wastes from both Kaiser and CBI operations after the war. Shaver made 42 trips to Swan Island between January 1947 and April 1949 (Shaver Transportation, 1949). Shaver log records list Swan Island pickups from vessels, the dry dock, and "unknown" (Shaver Transportation, 1949).

The term of the CBI sub-lease extended to September 8, 1951, but a handwritten notation on the agreement stated: "Terminated 8-31-49" (WAA, 1947d).

Other Subcontracts – Multiple Tenancy Program. Following its declaration of the yard as surplus in 1947, the WAA sub-leased or permitted use of its facilities as part of a "multiple tenancy program" for Swan Island. The building and property space were sub-leased to a number of tenants for industrial uses, such as:

- Aluminum oil tank manufacturing;
- Blackboard manufacturing;
- Electrical equipment storage and repair;
- Equipment manufacturing;
- Fire extinguisher service and storage;
- General office storage;
- Grain storage;
- Maritime supply sales;
- Paint storage;
- Printing;
- Roofing supply storage;
- Sheet metal shop;
- Ship dismantling;
- Soap and perfume manufacturing;
- Steel fabrication and storage;
- Thermostat and electrical control manufacturing;
- War surplus storage; and
- Wood products manufacturing.

In addition to the aforementioned subcontracts, in April 1948, WAA entered into an agreement with Portland General Electric (PGE) where PGE agreed to purchase all of the electrical equipment at the yard for the purpose of providing power to various occupants (WAA, 1948b).

In further support of the WAA's divestment efforts, in March 1949, WAA entered into an agreement with the Port, Oregon-Washington Railroad and Navigation Company (OWR&N), and Union Pacific Railroad (UPRR). The agreement granted OWR&N and its lessee, UPRR, the right to operate the railroad tracks previously constructed by WAA and operated by Kaiser. The agreement also included provisions for WAA to maintain specified tracks through the life of the agreement, which terminated on March 9, 1952 (WAA, 1949b).

WAA Facility Inspections. The WAA conducted annual fire and security inspections of the Kaiser shipyard after the war (WAA, 1947c, 1948f, 1949a, 1949c). An appraisal of the property in 1946 also provided information on the condition of equipment and structures.

According to a Re-Inspection Fire Protection and Security Report for September 1948 (WAA, 1948g), the shipyard facility was almost entirely sub-leased for manufacturing and storage purposes. Pumps located in the pump house on the west side of Swan Island pumped water from the Willamette River to supply a 10-inch yard main. Appendices B through E summarize building uses, occupants,

business activities, and tenants who had sub-leased space and include information from the time of the 1948 report.

3.2.3.3 Navy Berthing Area Activity

The U.S. Navy's Commissioning Detail in Portland recommended a General Policy for the allocation of work items concerning the Tongue Point Group Reserve Fleet based in Astoria. An inspection of each vessel arriving at Tongue Point would determine work that could be performed by the vessel's force or at a shipyard. For the latter, all vessels would be sent to designated yards in Portland (U.S. Navy, 1945c). The ships would be returned to Tongue Point upon completion of assigned tasks. Work to be done in Portland included "major" painting, scaling of tanks, major chipping jobs, and all underwater work (U.S. Navy, 1945c).

Job orders for work involving repairs or inactivation specified procedures and materials. A job order for a ship sent from the "Columbia River Fleet" to Swan Island directed installation of a new diesel engine and hull repairs. Regarding the latter, loose putty would be removed, wood surfaces treated with a "toxic water-repellant type of wood preservative", and anti-fouling paint applied (U.S. Navy, 1946f). Other directives from the Navy noted the use of rust prevention compounds and "strippable coating adhering plastic" (U.S. Navy, 1946d and 1946e).

The U.S. Army Corps of Engineers (USACE) issued a permit in June 1946 granting the Navy permission to place 24 temporary mooring anchors at Swan Island "to be removed no later than December 31, 1946" (U.S. Army Corps of Engineers, 1946). The Navy had berthed ships at Swan Island prior to June, but the USACE's permit allowed for an expansion of activity. As of November 1946, the Portland Sub-Group of the 19th Fleet maintained custody of 210 ships at Swan Island in the following locations: 109 on the north side of the lagoon, 57 on the south side of the lagoon, and 44 at the former deperming station located at the south end of Swan Island (U.S. Navy, 1946h). Figure 16 is a 1948 photograph showing ships moored in both the lagoon and the river.

In December 1946, the Navy's commander for the Berthing Area Activity informed Kaiser that a lease would be negotiated with them for berthing space in the upper end of the lagoon (U.S. Navy, 1946i). The lease would be effective retroactively to July 1, 1946.

3.2.4 Sale of Shipyard to the Port

3.2.4.1 Initial Negotiations

Discussions began in late 1946 between the Port and WAA concerning the impending transfer of ownership for government facilities at Swan Island from the Maritime Commission to WAA. The WAA prepared a "Planning Report for Swan Island Shipyard" sometime in late 1946 or early 1947 in anticipation of future uses and eventual disposal of the site (WAA, 1946a). The report included recommendations for the disposition of the facility. Most notably, those recommendations included return of the shipyard to the Port. The report also noted the deterioration of buildings constructed for the shipyard and the expense of maintaining them properly as reason to dispose of the facility.

Finally, the WAA concluded, "The yard itself has served its purpose while used for ship construction and therefore, as previously stated, in lieu of restoration be returned to the Port" (WAA, 1946a).

The WAA advertised for sale the structures comprising the shipyard in 1947. They received "several proposals," including one from the Port, but found all proposals "unacceptable" (WAA, 1948c). The WAA declined all offers and deferred further considerations until completion of an appraisal of Swan Island in March 1947 (WAA, 1947a).

The Ralph Parsons Company (Parsons) prepared an appraisal on behalf of the WAA. It attached value to government-owned property based on original construction or purchase price, current condition, and adaptability for continued use. The information also allowed for comparisons of future bids on the property. The appraisal described the Port as the most "logical purchaser" of the government's facilities, but noted "considerable rearrangements and alterations would doubtless be required" to make it useable for industries new to Swan Island (Ralph Parsons Company, 1947).

Despite all the caveats noted in the appraisal, Parsons judged the most suitable uses to be construction of small ships, ship repairs, and manufacturing requiring assembly line production.

3.2.4.2 Questions of Restoration

Upon review of bids in the spring of 1947, the WAA determined to negotiate with the Port on a settlement for sale of the government's property. Negotiations with the Port continued into summer 1947, but the Port expressed reluctance based on the facility's state of disrepair. The WAA's appraisal had identified problems with deteriorating structures and the need for alterations to sustain use of the shipyard complex. Also, the WAA's sub-lease with CBI recognized possible deficiencies in existing utilities not meeting "health and safety regulations" (WAA, 1947d).

The Port subtracted anticipated costs of restoration when calculating its bid for the property and requested WAA consider the Port's request for provisions in the sale agreement for repair and replacement of facilities at WAA's expense. The WAA declined and terminated negotiations with the Port in July 1947 (WAA, 1947d).

The original lease between the Port and the Maritime Commission contained provisions requiring restoration where the Maritime Commission removed facilities. The disagreement between the Port and the WAA hinged on the interpretation of "restoration." The Port interpreted restoration to mean that removal of any facility should result in removal of all facilities and, consequently, restoration of all leased premises. The WAA interpreted the provision as applying only to restoration for areas where structures had been removed (WAA, 1946b).

While the Port and the WAA voiced their perspectives, the WAA pursued a "multiple tenancy project" (see Section 3.2.3.2) at Swan Island. The WAA sub-leased facilities to numerous tenants in order to demonstrate the worth of the property to the Port. In turn, they used that situation to construct a proposal to the Port whereby the purchase price for the Swan Island facilities could be paid to the WAA from rental proceeds on properties sub-leased by the WAA (WAA, 1948c). The proposal was presented to the Port in May 1948.

As the Port and government tried to resolve their differences, flooding of large portions of Swan Island and adjacent areas in June 1948 had the potential to impact the value of the property. The flooding inundated the barracks area near Swan Island. Water stood at the eaves line on the barracks during an inspection of the area (WAA, 1948d). The area remained under water for three weeks (WAA, 1948f).

Correspondence in July 1948 reported the WAA had failed to resolve the question of restoration. By that time, WAA facilities were quickly going into disrepair and becoming unusable. The outfitting dock, for example, had deteriorated to such degree that it required extensive repairs. The WAA, however, stated it did not have "funds or authority" to "rehabilitate" the dock and warned tenants of the risk in using it (WAA, 1948e). The WAA stated "it is extremely doubtful that the facility can be returned to its original shipbuilding use."

After continued negotiations, the General Services Administration (GSA), successor to the WAA, sold all buildings, improvements, and equipment held for disposal at the Swan Island shipyard to the Port on December 9, 1949 (GSA, 1949). The Port paid $350,000 for the facility, which was $100,000 more than its initial offer in early 1946 (GSA, 1949). The GSA transferred all of its sub-leases and permits to the Port and terminated the government's lease.

3.3 Facility Users

Appendix C lists the businesses that occupied the various buildings located within the SIUF boundaries. Appendix D summarizes the types of activities and operations that were performed by the various businesses.

As part of its materials provided to interested buyers, the WAA produced a "Schedule of Instruments to be Assigned to Buyer of Swan Island," which listed tenants with long term sub-leases and interim permits (WAA, undated). Tenants on that list are presented in Appendix E.

3.4 Potential Areas of Concern

Appendix F is a summary of documented releases and spill events as identified in records of the National Response Center (NRC), DEQ spills and releases information, and Port records. It includes information on specific events that occurred during the United States' control of the facility. Based on the release/spill history together with the historical information summarized in Section 3.2 and Appendices B through E, this section identifies potential areas of concern from the military period of operation of the SIUF.

3.4.1 OU1

Hazardous Substance Use and Waste Management

The federal government, through the actions of the Maritime Commission, WAA, U.S. Navy, and USACE, leased property and owned certain equipment, machinery, dry dock facilities, property, and raw materials at Swan Island. The operations conducted at the shipyard involved building ships with

Maritime Commission-owned equipment, machinery, and raw materials and likely produced discharges of hazardous substances to OU1. As reported by U.S. EPA, these substances were likely to include but not necessarily limited to lead, zinc, copper, chromium, mercury, and other heavy metals, grease and oils, abrasives, solvents, cutting fluids, organic compounds, organotins, resins, fiberglass, cyanide, used paints and the like (EPA, 1976 and 1997). Activities by the United States, tenants, and contractors after the war would have also included many of these substances.

The WAA, its contractors, and the Navy conducted activities during their tenure that related to ship repair and decommissioning as well as maintenance of ship yard facilities. Few specifics are currently known about the nature of these activities, but there were likely wastes generated during that period. Ship construction conducted during the war would have generated wastes also. Throughout the period of the government's involvement at the shipyard, documents described activities known to generate contaminants of concern and, in some cases, reported the actual accumulation or release of wastes at the shipyard (see Appendix F).

Public records contain some information on releases and spills that occurred during the military and Kaiser's operation of the shipyard. Appendix F is a listing of documented release and spill events. Of the events that occurred during the time that Kaiser operated the shipyard, the following discussion relates to activities conducted on OU1.

Recent federal investigations have confirmed Polychlorinated Biphenyls (PCBs) in solid and liquid form were and are contained in equipment and materials on ships being scrapped (Friends of the Earth, 2006). An EPA guide for ship scrappers (EPA, 2000) identified the following equipment and materials that "may contain" PCB concentrations in excess of 50 parts per million (ppm):

- Cable insulation;
- Rubber and felt gaskets;
- Thermal insulation material including fiberglass, felt, foam, and cork;
- Transformers and capacitors;
- Voltage regulators, switches, reclosers, bushings, and electromagnets;
- Adhesives and tapes;
- Oil contained in/on electrical equipment and motors, anchor windlasses, and hydraulic systems;
- Surface contamination from machinery;
- Oil-based paint;
- Caulking;
- Rubber isolation and foundation mounts;
- Pipe hangers
- Light ballasts; and
- Plasticizers.

The same report listed numerous other contaminants present in ships or associated with ship scrapping. Ship construction, repair, inactivation and breaking that occurred at the Kaiser shipyard would have worked with the aforementioned materials. Although there is only limited information on the types of potentially hazardous substances used at the yard during this period, the documentation available indicates the typical equipment used and activities conducted associated with hazardous substances.

Electrical Substations

Two power substations (Figure 15, Substations B and L) on OU1 had transformers that were filled with Pyranol (a known PCB-containing product). Circuit breakers and potheads at Substation B and a separately located transformer adjacent to Way End Building 30-3 were filled with oil that may have contained PCBs.

Three additional substations were identified as located on OU1 during the Kaiser era. One, Substation J, became the current Substation 4. Two others (Substations D and K) are no longer extant and the type of equipment they utilized is unknown.

Nine substations identified on OU1 (Substations E, F and the remaining seven Way End Building substations) did not utilize any equipment suspected to contain PCBs.

The substations that are considered a potential AOC are further discussed in Section 7.2.

3.4.2 OU2

The four power substations on OU2 (Substations A, P, Q and R) shown on Figure 15 contained oil-filled equipment (transformers and potheads) that may have contained PCBs. No other potential areas of concern from this period were specifically identified for OU2. These substations are further discussed in Section 7.3.

3.4.3 OU3

The one power substation on OU3 (Substation M) shown on Figure 15 had two transformers that were filled with Pyranol (a known PCB-containing product) and one transformer that was an OISC unit filled with oil that may have contained PCBs. No other potential areas of concern from this period were specifically identified for OU3. These transformers are further discussed in Section 7.4.

3.4.4 Adjacent Properties

Areas of potential concern are discussed for adjacent properties to the extent that these adjacent properties have the potential to be sources of contaminants that may be detected on the SIUF. The scope of records review for this Supplemental PA did not include an exhaustive search for adjacent properties. This section presents information obtained incidental to the records review for the SIUF.

3.4.4.1 Electrical Substations

Historically, one electrical substation was located adjacent to OU1 (Substation G) and two power substations were located adjacent to OU2 (Substations T and X) (Figure 15). All three substations had transformers that contained Pyranol, and Substation T also had a transformer that contained Chlorextol; both known to be PCB-containing products. Substations G and X were also identified as

equipped with potheads, which may have been filled with oil that contained PCBs. Electrical substations on adjacent properties are further discussed in Section 7.5.

3.4.4.2 1948 Flood

Aerial photographs of the 1948 flood depict the areas of Mocks Bottom and the southerly end of Swan Island under water. Flooding of this magnitude had the potential to redistribute contaminants either on land or to the Willamette River. This is further discussed in Section 7.5.

3.4.4.3 Military Hazardous Substance Use and Waste Management

The hazardous substance use and waste management discussed in Section 3.4.1.2 also applies to properties adjacent to the SIUF including the Willamette River, Swan Island Lagoon, and adjacent upland properties.

In addition, the public records on releases and spills that occurred during the military and Kaiser's operation of the shipyard listed in Appendix F include two events that relate to releases adjacent to the SIUF, discussed below.

- In May 1946, the Commander of the Berthing Area Activity reported the observation of sludge in the "Swan Island Basin" emanating from ships moored there. The same correspondence indicated that Kaiser had placed complaints that Naval personnel dumped sludge in the disposal area adjacent to the Naval Barracks (U.S. Navy, 1946a). The location of the sludge disposal area is unknown, but barracks were in two locations – at the south end of Swan Island and across the lagoon in what is known as Mock's Bottom (see Figure 9). Neither of these barracks were located within the SIUF.

- In late May 1946, the Commanding Officer of LST 761 admitted his ship and others were "responsible for the oil pollution of Swan Island Lagoon" evident on April 22, 1946. The bilges had been pumped against orders (U.S. Navy, 1946b). A month later, the Commander for the Berthing Area Activity determined a recent fire at the deperming station located on the Willamette River side of Swan Island indicated "that the standing order forbidding pumping of oily bilges is being disobeyed" (U.S. Navy, 1946c).

3.4.4.4 USTs

Three USTs were installed along the northwest corner of Building 2 which is adjacent to the SIUF south of Building 4 (see Figure 10). Reported as "fuel" tanks, one of the USTs was a 6,000-gallon and two were 10,000-gallon tanks. Based on Kaiser Company Drawing SI2-42-1-42/53, the tanks appear to have been connected to the furnace in Building 2. No documentation on their installation or removal was identified.

The above subsections are further discussed in Section 7.5.

4. Portland Shipyard (1950 through 1995)

4.1 Introduction

Following extensive negotiations (see Section 3.2.4), the WAA surrendered its lease and sold all facility improvements (buildings, wharves, piers, gantry cranes, and miscellaneous equipment) to the Port in December 1949. This property became the Swan Island Ship Repair Yard, later referred to as the Portland Ship Yard or PSY.

Many of the existing facilities were taken over and used as they existed (e.g., Building 4 and Dry Dock 1). However, some facilities were not needed (e.g., the shipways), and modifications and improvements were needed to operate the facility as a shipyard (e.g., dry dock basins, sewer upgrades). Major facility modifications and upgrades are discussed in Section 4.2.1.

Throughout this period, the Port owned and operated the PSY. But the actual ship repair activities were performed by contractors, and tenants performed industrial operations in leased facilities. The Port was responsible for maintaining the yard and major equipment, providing utilities, and overseeing ship moves on and off of the dry docks. This unique relationship for operation of the shipyard is further discussed in Sections 4.2.2, 4.2.3, and 4.3.

4.2 Historical Narrative

Following the negotiations for shipyard purchase, the Port developed and began operations of the PSY. As discussed below in Section 4.2.1, facility development included modifications of buildings, various utilities and facilities to support ship repair operations. Most of the initial redevelopment occurred in the early to mid-1950s, and included the demolition of several of the shipways to install dry docks and the abandonment of others to create additional uplands. The next phase of redevelopment occurred in the 1960s when several new berths were constructed in Swan Island Lagoon. The final phase of redevelopment occurred in the 1970s when the first ballast water treatment plant was constructed; this plant was replaced by the current ballast water treatment plant in the late 1970s when the New Yard (i.e., berths along the Willamette River) was constructed. Between 1950 and 1995, the Port maintained and operated shipyard facilities while a number of contractors utilized the shipyard and its appurtenances to perform ship repair activities. Also during this period, the Port and primary ship repair contractors leased space to a number of tenants who supported ship repair activities or conducted independent industrial operations.

4.2.1 Facility Development

As the facility was in disrepair, the Port undertook significant redevelopment efforts following its acquisition in order to rehabilitate and modify the facility sufficient for ship repair purposes. As such, a range of construction projects occurred generally between 1950 and 1962. A brief summary of these activities (chronologically by year) follows.

1950
General rehabilitation activities were initiated at the yard in 1950, mainly focusing on the buildings and equipment that were in the worst state of disrepair and/or where conditions represented a hazard. As such, various buildings were demolished, others had structural repairs, and many were cosmetically updated or modified for reuse.

During 1950, the three northernmost shipways (1, 2 and 3) were demolished in order to prepare the area for filling and for the construction of a new dry dock basin (see Figure 10). Figure 17 is an aerial photograph taken in 1950 that shows what appears to be the initial demolition of the three shipways. Figures 18, 19, and 20 show various stages of shipway demolition and construction of the bulkhead for the new basins. Also at that time, electrical line and overall service modifications were made at the pier and various buildings. Buildings were designed to house power, shop, sanitary facilities and contractor activities. The buildings under the craneways were dismantled and salvaged lumber was used for sheathing on other buildings, and the way end buildings were either removed or demolished.

1951
In 1951, Building 50 was constructed, Substation J was reactivated and gantry crane tracks were reinforced. Boilers and appurtenances (burners, oil tank, valves and fittings) from the Boiler House (Building 35) were decommissioned and sold to the J.D. Sampson Company (J.D. Sampson continued to rent Building 35 past its acquisition of the equipment for storage purposes of same). A new shop building and Substation 1 were constructed. Septic tanks were installed west of Buildings 50 and 60.

1952
In 1952, Buildings 54 (paint and oil storage), 60 and 61 were constructed. The facility's original boiler (Building 58) was installed and a large utility tunnel was constructed to the east of Building 60. Construction of finger pier and deck facilities initiated. Building 7 expanded for Port offices. Figure 21 shows the new basin area in 1952: the three shipways are gone and Berths 309 and 310 are under construction. In addition, the foundations for Buildings 50 and 60 are visible near the top of the photograph on each side of the approach to the pier under construction.

1953
In 1953, the blacksmith and welding building was constructed.

1954
In 1954, the Swan Island sanitary sewer trunk interceptor was completed.

1955
In 1955, alterations were made to Building 3, and repairs were made to Building 56.

1956
Figure 22 is a 1956 oblique aerial photograph showing the shipyard after completion of the first phase of redevelopment. The new basins and Buildings 50 and 60 were complete. Old shipways 4 through 8 were still present. Repairs were made to Building 56.

1957
In 1957, Building 7 was remodeled. Repairs were made to N. Lagoon Avenue in the vicinity of Building 10, and railroad trackage repairs were made at various locations across the yard. Construction of the basin for Dry Dock 3 was initiated.

1958
In 1958, the ferry slip was removed. The original boat ramp was constructed proximal to OU3. New lead track (Track A) was constructed, and rail track between Buildings 2 and 4 was removed. Alterations were made to Building 4, including structural upgrades, rail spur construction, and elimination of six interior drains through cutting and plugging. An addition to Building 58 (Boiler House) was constructed.

1959
In 1959, Pier A was releveled. Plumbing upgrades were made to various buildings and dry docks.

1960
In 1960, N. Channel Avenue was extended.

1961
In 1961, rehabilitation of Berths 6 through 8 was completed. Electrical modifications were made to the yard, and Substation R was removed. YFD-69 (Dry Dock 1) was relocated. A remodel and repairs were made to Building 7. Land erosion on the lagoon side of Building 77 was remedied. The Boat ramp was extended. The metal siding and roof was redone on offices east of Building 4. The overall Swan Island bank protection project was initiated.

1962
By 1962 demolition of remaining shipways (4 through 8) was completed (Figure 23 is an aerial photograph that shows that the shipways were partially filled by 1958) and the area of the former shipways had been filled (Port, 1961a). The total estimated fill needed to fill the shipways was 650,000 cubic yards (Port Drawing WR 64-1). Known fill events at the former shipways included the following:

- Some of the dredged materials placed in the shipways may have come from the 1957 construction of the basin for Dry Dock 3, which was located east of Berth 310 (see Figure 2). Port records regarding the amount of materials, if any, generated by this construction project have not been located.

- In 1960, the Port authorized General Construction Company to place 20,000 cubic yards of dredged material in the area adjacent to the old shipways (Port, 1960).

- In 1961, the Port authorized General Construction Company to place 1,500 cubic yards of materials dredged from Pacific Building Materials in the area adjacent to the old shipways (Port 1961b).

- In 1962, approximately 400 cubic yards (*in-situ* volume calculated based differences in pre-dredging and post-dredging river bottom elevations; Port Drawing YA 62-10) of sediments were placed in the abandoned shipways.

- Also in 1962, the Port allowed General Construction Company to place 7,000 cubic yards of dredged material in the area adjacent to the old shipways (Port, 1962).

The following is a more detailed description of the facilities that made up the layout of the Portland Shipyard. The facilities were either remnants of the former military shipyard or developed after the Port's acquisition. A detailed discussion of each facility, by respective OU, follows.

4.2.1.1 OU1 Features and Development

Buildings. Overall summaries of building uses and occupants are provided in Appendices B and C. The following table identifies each building that is or was present on OU1 including how it was used, when it was constructed, and its current status.

Building	Use	Disposition	Status[1]
4	Assembly building	Remnant of former shipyard	Extant
6	Compressor house	Remnant of former shipyard	Razed in 1964
6 (new)	Office space & storage of non-hazardous supplies	Constructed by Port in late 1970s	Extant
7	Field office	Remnant of former shipyard	Razed in 1966
8	Acetylene building	Remnant of former shipyard	Razed in 1985
9 (new)	Truck repair facility & machine shop	Constructed by Port in 1965. Inspected by DEQ in 1980 (Oregon DEQ, 1980a) and confirmed that no hazardous wastes were being stored or disposed of at the building.	Extant
10	Pipe shop and welding	Remnant of former shipyard	Extant
12	Carpenter shop	Remnant of former shipyard	Razed in 1962
20B	Substation	Remnant of former shipyard	Deactivated by 1965 & removed by 1972
29	Substation	Remnant of former shipyard	Extant; part of Substation 3
30	Way end buildings	Remnant of former shipyard	Razed by 1961
31A	Utility building	Remnant of former shipyard	Razed by 1956
31B	Utility building	Remnant of former shipyard	Razed by 1966
35	Boiler House	Remnant of former shipyard	Razed by 1967
38	Equipment maintenance	Remnant of former shipyard	Razed by in 1960
43	Originally pipe assembly and fitting building, later for engine and boiler fabrication and repair	Remnant of former shipyard	Extant
50	Metal working shop & administrative offices	Constructed by Port in 1951 with a 6,500 square foot addition in 1962	Extant
54	Paint and oil storage	Constructed by Port in 1952	Razed by 1993
58	Rigging shed	Constructed by Port in 1957, addition constructed in mid-1960s	Extant
60	Maintenance shop	Constructed by Port in 1952	Extant
61	Shipyard sign shop	Constructed by Port in 1952 and replaced in 1982	Extant

Building	Use	Disposition	Status[1]
62	Paint booth & hazardous materials storage shed	Constructed by Port in 1993	Extant
63	Covered storage, carpenter & machine shops	Constructed by Port in 1967	Extant
63A	Warehouse & work area for ship repair products	Constructed by Port by 1971	Extant
64	Truck repair facility & machine shop	Constructed by Port in ~1965	Extant
71	Office building	Constructed by Dillingham in 1979	Extant
72	Cafeteria, storage, exercise facilities, warehouse	Constructed by Port in 1981	Extant
73	Sandblasting & painting	Constructed by Port in 1980-1981	Extant
76	Storage platforms	Remnant of former shipyard	Removed by 1948
77	Outfitting building or Navy Conversion Building	Remnant of former shipyard	Razed in 1968
80	Originally ship outfitting, later used for office space & shop	Remnant of former shipyard	Extant
Dry Dock #1	Dry dock facility	Remnant of former shipyard	Extant
Dry Dock #2	Dry dock facility	Installed by Port in 1953	Sold and relocated in 1990; returned to SIUF for deconstruction 2005-present
Dry Dock #3	Dry dock facility	Installed by Port in 1962	Extant
Dry Dock #4	Dry dock facility	Installed by Port in 1978	Sold and relocated in 2001
Berth 301	Breasting pier for Dry Dock 1	Remnant of former shipyard	Extant
Berths 302-303	Repair berths	Remnant of former shipyard	Extant
Berths 304-305	Outfitting & repair berths	Remnant of former shipyard	Extant
Berths 306-308	Lay-up berths	Original pier constructed in 1942, rebuilt by Port in ~1969	Extant
Berths 309-310	Breasting pier for Dry Dock 3	Constructed by Port in 1950	Extant
Berth 312	Repair berth	Constructed by Port in 1979	Extant
Berth 313	Repair berth	Constructed by Port in 1979	Extant
Berth 314	Repair berth	Constructed by Port in 1979	Extant
Small Boat Basin	Berthing of small work boats	Constructed by Port in 1950	Extant
Card Lock Fuel System	Refueling	Constructed by Port in 1987	Extant
BWTP #1	Ballast Water Treatment Plant	Constructed by Port in 1971	Replaced with BWTP #2 in 1979
BWTP #2	Ballast Water Treatment Plant	Constructed by Port in 1979	Extant
Storm Water Treatment Plant	Storm water treatment	Constructed by Cascade General In 1997	Extant
Central Utility Building	Steam production facility	Constructed by Port in 1977	Extant
Building 605	Central waste collection	Constructed by Port in late 1960s	Extant

[1]Where available, documentation did not definitively establish construction and demolition dates, aerial photographs were used.

Electrical Utilities. A 1949 PGE drawing (Port Drawing SI 49 501) shows the primary electrical system just prior to transfer of the PSY to the Port (11 kv lines). Substations on OU1 included B, D, E, F, J, K, and L (see Figure 15). The Port constructed Substation 1 (located just east of Building 60) in 1951 (shown as an update to Port Drawing SI 49 501). The other military substations were still present but serviced lower voltage lines.

As previously discussed above, in 1952, in conjunction with the installation of the facility's original boiler (Building 58) and Substation 1, a large utility tunnel was constructed. The boiler supplied steam to the shipyard and was decommissioned in 1979 when the Central Utility Building (including a substation) was constructed. Other substations, that were remnants of the military installations on Swan Island remained in use for a period of time following the Port's acquisition of the facility, including:

- Building 20B (military Substation B), which was deactivated by 1965;
- Building 29 (YFD-69 substation), which is now part of Substation 3;
- Military Substation J, which is the current Substation 4;
- Military Substation K, which became Substation 5; which was moved to its current location sometime after 1981 (Port Drawing YA-81-1) (see Figure 24);
- Military Substations E and F, which were owned by PGE and were still present in 1981 (Port Drawing YA-81-1); and
- Military Substations D and L, which were no longer present in 1981 (Port Drawing YA-81-1).

Figure 24 shows the locations of the current SIUF substations. New Port Substations 7 and 8 were constructed in 1979 as part of the New Yard (see below). Port Substation 6 is close to the location of military Substation L, but it is uncertain if these are related.

The 1990 DEQ PA states that in 1979, the Port inventoried transformers and found that 7 out of 40 were PCB transformers as defined under 40 CFR 761 (Oregon DEQ, 1990). These transformers were targeted for removal, with details discussed as follows.

- Three 1,500 Kva transformers (PCB content unknown) with no identified location were disposed of in June 1984 under Port Project 51091.

- A September 1985 table of "Portland Ship Repair Yard, Suspect Transformers" lists 16 pieces of electrical equipment that could have contained PCBs. Three were located in Substation 3 and 10 were located in Substation 1. An undated table indicates that a 667 Kva transformer (manufacturer no. 3150916) contained 32 ppm PCBs.

- A Port drawing from 1985 shows the location of the PCB transformers on the SIUF at that time (Port Drawings, YA 1985 0024). There were ten PCB transformers, two at Substation No. 1 and eight at Substation No. 6.

- A 1,500 Kva transformer (PCB content unknown) that was located in Substation 4 was disposed of on February 26, 1986.

- A 25 Kva transformer (PCB content unknown) located in a substation near Berth 306 was disposed of on February 26, 1986.

- An undated table titled "Portland Ship Repair Yard PCB Transformers" indicates that there were two 200 Kva transformers (PCB content unknown) in Substation 1 that were scheduled to be replaced in May 1988.

- In 1992, the Port upgraded Substation 1 with new electrical equipment. Existing equipment was inventoried and tested for PCBs prior to removal and disposal. The equipment included 13 transformers, 6 over current breakers, and 5 electrical potheads. In addition, there was one 55-gallon drum of dielectric fluid and a small area of suspected soil contamination. Testing of the equipment, drum, and soil found the following (Hahn and Associates [HAI], 1992a):

  - PCBs were not detected in the drum of dielectric fluid;

  - Two transformers contained dielectric fluid that was 45 to 49 percent PCBs, and PCBs were detected in wipe samples collected from the supporting concrete pad and surrounding asphalt concrete at concentrations of 1 to 4,500 µg/100 cm^2 (estimated quantity of concrete/asphalt needing removal was 2 cubic yards);

  - The remaining 11 transformers contained 1 to 44 ppm PCBs in the dielectric fluid;

  - PCBs were detected at 3 to 44 ppm in dielectric fluid from the over current breakers; and

  - PCBs were detected at concentrations of 0.14 to 5.4 ppm in surface soil samples collected beneath one of the transformers, beneath an over current breaker, in a depression on the south side of the substation, and in an unpaved electrical service trench (the estimated quantity of soil above 1 ppm was less than 20 cubic yards).

  - As part of the upgrade, the Port decontaminated the substation in two phases during April and June 1992. Reidel Environmental Services remediated areas identified as contaminated with PCBs and removed and disposed of all electrical equipment. Hahn and Associates collected verification samples after each phase of work (HAI, 1992b and 1992d).

All transformers at the SIUF with PCBs were removed by 1992 (Bridgewater Group, 2000C).

Storm Sewers. Port drawings from 1952 show the storm sewer system to be the same as the war-time system installed by Kaiser (Port Drawings, SI 1952 0001). In 1962, Channel Avenue was moved inland about 500 feet to its current location. A new storm water main was installed beneath the relocated Channel Avenue (Port Drawings, SI 1967 1017). Further expansion of the system to the north, including new lines beneath Lagoon Avenue, was completed in 1964 (Port Drawings, SI 1967 1019), and the final expansion at the north end of Lagoon Avenue was completed in 1968 (Port Drawings, SI 1968 1000). Many of the outfalls remaining from the military period were connected to the new storm sewer mains. Figure 25 is a circa-1965 aerial photograph of Swan Island. The new portions of Channel Avenue and Lagoon Avenue are visible as distinctly darker pavement.

Sanitary Sewers. Drawings from 1951 for "New Pier and Facilities at Swan Island" show installation of septic tanks west of Buildings 50 and 60 (Port Drawings, YA 1951 0501). Port drawings from 1952 show the sanitary sewer system to be the same as the war-time system installed by Kaiser, with sanitary sewers discharging to the Willamette River (Port Drawings, SI 1952 0001), but a proposed

sewer interceptor is also shown (Port Drawings, SI 1952 0010). The sanitary sewer trunk interceptor was completed in 1954 (Port Drawings, SI 1967 1005). A drawing showing "Dry Dock Yard Underground Utilities" indicates that the septic tanks near Buildings 50 and 60 were abandoned by 1961 (Port Drawings, YA 1961 0022). In 1962, Channel Avenue was moved inland about 500 feet (to its current location). A new sanitary sewer was installed in the re-located Channel Avenue (Port Drawings, SI 1967 1017). Further expansion of the system to the north, including new lines beneath Lagoon Avenue, was completed in 1964 (Port Drawings, SI 1967 1019), and the final expansion at the north end of Lagoon Avenue was completed in 1968 (Port Drawings, SI 1968 1000). The interceptor sewer installed beneath the original Channel Avenue was abandoned in 1970 (Port Drawings, YA 1981 0001).

Construction of Dry Docks. As previously discussed in Section 3.2.2.3, the Navy constructed what is now known as Dry Dock 1 (YFD-69) for the Maritime Commission and installed it in 1945. The 12,000-ton wooden Dry Dock 2 was constructed in the early 1920s and was originally installed at the Port's St. Johns yard. Dry Dock 2 was relocated to PSY in 1953. The basin for Dry Dock 3 was constructed in 1957 and the dry dock was installed in 1962. Figure 26 is a 1963 aerial photograph that shows Dry Docks 1, 2, and 3. Dry Dock 2 was not used after 1985. It was decommissioned and sold in 1990 and moved to an off-site location. Dry Dock 2 was recently reacquired through a joint venture between Cascade General and Trestlewood of Blackfoot, Idaho, for the purpose of deconstruction and salvage of the dry dock's wood structure. At present, Dry Dock 2 is temporarily situated in its former location and dismantling efforts are underway.

In 1978, the Dry Dock 4 basin was dredged and Dry Dock 4 was installed. Figure 27 shows Dry Dock 4 in place. In 1995, three dry docks were located at the facility and included Dry Dock 1 (YFD-69), Dry Dock 3, and Dry Dock 4.

Berths. The berths along Swan Island Lagoon (see Figure 28) remained in place until 1967 when the Port demolished Berths 6, 7, and 8, and then constructed three concrete finger piers that are now referred to as Berths 306, 307, and 308. Each finger pier contained a shore-side concrete deadman for attachment of ships' lay-up cables. Berths 306, 307, and 308 were periodically used as lay-up berths for ships under repair or to hotel ships until approximately 2002. Figure 29 is an aerial photograph of Berth 306.

Ballast Water Treatment Plant. The first treatment plant to manage ballast water was constructed in 1973 (referred to as the Ballast Water Treatment Plant or BWTP). It was located where Building 72 now stands (see Figure 2), southwest of the current BWTP. This area was part of the shipways from the Military period of the SIUF. The area was filled by the Port by 1967 and used for storage of wood and miscellaneous debris until construction of the first BWTP.

The first BWTP was constructed to separate contaminants, primarily petroleum products, from ship ballast water. It consisted of five ponds lined with polyethylene sheets and a series of 11 above-ground tanks for heating/treating the water (Oregon Journal, Northwest Business, 1973). The ponds were used as holding ponds or for gravity separation of oil and water. The tanks were used for heating the water with chemicals to further separate oil from the water (Port, 1974a). Figure 30 is a 1974 aerial photograph that shows the BTWP ponds at the end of the island near the bottom of the photograph. The tanks (consisting of four horizontal tanks, six small upright tanks, and one larger upright tank) are just to the left and above the ponds on the photograph. Figure 31 is a closer view from 1975 with the BWTP tanks and ponds visible above center-right in the photograph.

The original plant was replaced by the current plant in 1979. Figure 32 shows the new BWTP during construction. Figure 33 shows the constructed BWTP; the ponds adjacent to the new BWTP, remnants of the first BWTP, were used as holding ponds until closed when Building 72 was constructed in 1981. The 11 tanks at the bottom of the photograph are from the first BWTP and were incorporated into the current BWTP. The current BWTP consists of multiple above-ground tanks serving as holding and treatment tanks for treating ship ballast water. The entire system is within a secondary containment wall.

New Yard. In 1978 and 1979, the Port constructed Berths 312 through 314 along the Willamette River; this area was referred to as the "new yard". Figure 27 shows the new berths under construction. Figure 34 is a 1979 aerial photograph that shows the new yard.

Underground Storage Tanks (USTs). Historically, there have been 15 USTs at the SIUF, 14 of which were located within OU1. Figure 35 shows the locations of active and inactive USTs at the SIUF, as of 2000. All of the USTs have been either closed or upgraded in accordance with applicable regulations and require no further action. Details for each tank are discussed below (from Bridgewater Group, 2000c, unless otherwise referenced).

Removed USTs:

UST #	Capacity (gallons)	Contents	Location	Installation Date	Removal Information
2	12,700	Diesel	Berth 305	Unknown	Removed in 1989 and 190 cubic yards of soil were removed. The tank received a no further action determination from DEQ (Oregon DEQ, 1992).
5	500	Diesel	SW Corner of Bldg 10	Unknown	Removed by 1992; 12 cubic yards of soil removed. The tank received a no further action determination from DEQ (Oregon DEQ, 1992).
6	500	Diesel	Between Buildings 43 and 50	1978	It was removed by 1992 and received a no further action determination from DEQ (Oregon DEQ, 1992).
7	1,000	Diesel	Between Buildings 43 and 50	1976	It was removed by 1992 and received a no further action determination from DEQ (Oregon DEQ, 1992).
8	2,000	Gasoline	Between Buildings 43 and 50	1976	It was removed by 1992 and received a no further action determination from DEQ (Oregon DEQ, 1992).
9	10,000	Fuel Oil	Between Buildings 58 and 64	1961	Removed in 1989 and 228 cubic yards of soil removed. At DEQ's request, further investigation conducted in 1991. Groundwater monitoring conducted and detected concentrations of petroleum deemed acceptable. Petroleum hydrocarbons found in soil, but the soil extended beneath structures (HAI, 1991b). Tank received a no further action determination from DEQ (Oregon DEQ, 1992).
10	250	Diesel	East of Building	Unknown	The tank was removed in 1991. Groundwater

UST #	Capacity (gallons)	Contents	Location	Installation Date	Removal Information
			58		monitoring was conducted and the site was closed (Oregon DEQ, 1992).
11	1,000	Gasoline	SW corner of Building 64	1966	The tank was removed by 1992 and received a no further action determination from DEQ (Oregon DEQ, 1992).
14	1,200	Glycol	North of Building 73	1978	Removed in 1992 and no contamination was found.
17	300	Diesel	North side of Building 4	Unknown	Removed by 1992 and tank received a no further action determination from DEQ (Oregon DEQ, 1992).

Existing USTs:

UST #	Capacity (gallons)	Contents	Location	Installation Date	Comments
12	20,000	Heating Oil	CUB	Unknown	In 1993, a leak from an oil return line was found in the concrete vault over UST #12. The vault did not have a bottom and oil was present in soil on top of the tank. Cleanup and risk-based closure of this UST was conducted between 1998 and 2000 (see Section 5.2.1.12).
13	20,000	Heating Oil	CUB	Unknown	
15	6,000	Gasoline	Card Lock Fueling Facility	1989	Constructed of dual-walled fiberglass with interstitial leak detection monitoring.
16	6,000	Diesel	Card Lock Fueling Facility	1989	Constructed of dual-walled fiberglass with interstitial leak detection monitoring.

In 1951, one gasoline UST was installed by Woodbury & Company at Building 2 on the south side of Building 4 (Woodbury & Company, 1951). The location of the UST was referred to as "Bay 9". While this UST was likely installed proximal to Building 2 (adjacent to the SIUF), it is not clear to which building the bay was associated. No information about this UST was found in a review of DEQ's online databases. This UST is further discussed in Section 7.5.

Above-Ground Storage Tanks. The only permanent ASTs at the SIUF were located at the BWTP (discussed above). Portable ASTs were used at the berths as part of other activities discussed elsewhere (e.g., painting or sandblasting). Small above-ground tanks, drums, and totes were used for solvent storage at Building 54 (immediately west of Building 43) and in the southeast corner of Building 10 (HAI, 1992c and 1992e).

4.2.1.2 OU2 Features and Historical Development

North Channel Avenue Fabrication Site. Between 1950 and 1978, the North Channel Avenue Fabrication Site was primarily open, graded soil with railroad spurs used for material receiving and storage (see Figures 36 and 37). A salvage building was located in the west-central portion of the area (Bridgewater Group, 2000c).

In 1978, the area was used as the staging and pre-cast concrete construction site for the new BWTP (Bridgewater Group, 2000c).

From 1985 to 1990, the North Channel Avenue Fabrication site was used by ARCO for the construction of modular units used for oil processing on Alaska's North Slope. Eight 2,700-ton modules were constructed in 1986, and seven 3,400-ton modules were constructed in 1990. Fabrication, finish painting and the application of fire retardant were conducted on concrete pads in the center of the area, with material storage, administrative modular trailers, and equipment stored around the perimeter of the area. A portable fire safety shed was constructed on the west side of the area. The shed was subsequently used as the Shipyard University. Building 83 was constructed as part of the ARCO modular fabrication project. This building served as a general shop and vehicle maintenance repair area. Figure 38 is a 1986 oblique photograph showing the modular units under construction. Figure 39 is a 1988 aerial photograph that includes OU2. Foundations for the modular fabrication project are visible in the center portion of OU2, and surface grading is visible at the south end of OU2.

In December 1989, the Port conducted an Environmental Review (ER) of the North Channel Avenue Fabrication site (HAI, 1989). At the time of the ER, permanent improvements included Building 81, an office building, and Building 83, a mechanical shop used for equipment maintenance. The following summarizes key findings of the 1989 ER (these areas were investigated as part of the Phase I RI – see Section 4.4.2.1):

- There were no visual indications of oil spills associated with the storage and use of oil to test gas turbines installed on some of the modules.
- Visible staining of soil was observed in the vicinity of an oil storage shed located south of Building 83. The shed was used to store drums of petroleum products (motor oil, lubricants, and greases).
- Apparent petroleum staining of the gravel surface east of Building 83 was observed.
- Gasoline and diesel fuel were being stored in two 500-gallon ASTs located south of Building 83; gasoline was being stored in a portable truck-mounted tank in the same area.
- There were no visible signs of paint or paint thinner stains in or around the roll-off box used to store these materials and a locker where paint brushes were cleaned on the north side of the North Channel Avenue Fabrication Site.
- There were no visible signs of photographic chemical spills near a portable trailer used for non-destructive X-ray examinations of welds located on the northern side of the North Channel Avenue Fabrication Site.
- Small losses of a 60 percent solution of ethylene glycol in water may have occurred in various locations when the solution was used to hydrotest piping systems installed in the modules.
- Two transformers were located on the northern side of the area, one was a non-PCB transformer and the other contained less than 50 ppm PCBs.

- There was no visual evidence of USTs.

A subsequent ER was performed on July 20, 1990 (HAI, 1990). The 1990 ER was performed at a time when the area was largely vacant, the oil production modules had been loaded, and temporary structures dismantled. The following additional observations were made (these areas were investigated as part of the Phase I RI – see Section 4.4.2.1):

- There was an area of visible staining near the fabrication shop on the west end of the North Channel Avenue Fabrication Site.

- Sandblast sand was observed on the ground on the west side of the North Channel Avenue Fabrication Site.

From 1990 to 1995, the area was used for storage activities associated with shipyard operations. Items stored included outdoor equipment, steel, wood, empty totes, and vehicles (Bridgewater Group, 2000c).

Electrical Substations. A 1949 PGE drawing (Port Drawing SI 49 501) shows the primary electrical system just prior to transfer of the PSY to the Port (11 kv lines) included Substation A on OU2. Other military substations were present on OU2, including P, Q, and R (see Figure 15), but serviced lower voltage lines. The military substations were decommissioned by the 1970s, but the timing of these events is uncertain.

Employee Parking Lot. The employee parking lot (i.e., Main Parking Lot shown on Figure 2) was constructed in 1977. In 1994, the employee parking lot was primarily used for parking vehicles (Bridgewater Group, 2000b).

OU2 Buildings. Overall summaries of building uses and occupants are provided in Appendices B and C. The following table identifies each building that is or was present on OU2 including how used, when constructed, and its current status.

Building	Use	Disposition	Status[1]
3	Former mold loft (straddles boundary with adjacent property)	Remnant of former shipyard	Razed in 1961
5	Oxygen house	Remnant of former shipyard	Razed by 1956
9	Machine shop	Remnant of former shipyard	Razed in 1962
20A	Substation	Remnant of former shipyard	Deactivated and removed by PGE in 1968
21	Boiler erection building	Remnant of former shipyard	Removed by Ellerman Sawmill Manufacturing Company in 1953
37	Motor Shed	Remnant of former shipyard	Razed by 1956
38	Equipment maintenance	Remnant of former shipyard	Razed by 1960
40	Lumber yard office	Remnant of former shipyard	Razed by 1956
53	Salvage depot with a shop and offices	Remnant of former shipyard	Razed by 1956

Building	Use	Disposition	Status[1]
56	Machinery storage	Remnant of former shipyard	Razed in 1962
81	Shipyard University	Constructed by Port in 1986	Extant
83	Module shop building	Constructed by ARCO in 1986	Extant (not currently in use)
Fire Safing Shed	Unknown	Unknown	Extant
Berth 315	Hotel berth	Constructed by Port in 1986	Extant

[1] Where available documentation did not definitively establish construction and demolition dates, aerial photographs were used.

4.2.1.3 OU3 Features and Historical Development

Building 23. In 1948, a small building was located on the northern portion of OU3. Based on review of facility maps for the Kaiser shipyard, this building may have been the lunch room shown on Figure 9, or a guard house or restroom facility for shipyard workers. Aerial photographs indicate the building was removed prior to 1953.

Building 70. Based on a Phase I environmental site assessment (ESA) completed in 2002 (HAI, 2002), Building 70 was constructed in 1980, and was initially occupied by Crosby and Overton Marine and Environmental Cleaning, Inc. (Crosby & Overton). In 1983, EPA inspected Crosby & Overton uses of Building 70 and sampled waste oil stored in two portable above-ground tanks at the facility to test for PCBs (U.S. EPA, 1983a). The waste oil samples were below detection limits for PCBs (EPA, 1983b). Crosby & Overton occupied the property until 1989.

The property was subsequently used by Chemical Processors, Inc. (1989 to 1992), Burlington Environmental, Inc. (parent company of Chemical Processors, also from 1989 to 1992), and Foss Environmental, Inc. (1992 to 2002). The site is currently used by Freightliner LLC as a test engineering facility for testing new trucks for engine emissions standards.

After the existing office/warehouse building was constructed on the southwest portion of OU3 in 1980, the occupants stored containment booms, vacuum trucks, pumps, and other environmental incident response equipment. According to the Phase I ESA, Foss Environmental stored, maintained, transported, and deployed industrial pumps, oil containment booms, hoses and related land and marine environmental incident response equipment associated with Foss's business as an environmental response contractor. Containerized wastes and petroleum-impacted soil were occasionally stored in the asphalt-paved parking and equipment storage area for short durations prior to being shipped offsite. These activities continued until 2002.

Fire Marshall records reviewed as part of the Phase I ESA indicated that between 1996 and 2001 the following materials were stored on the property: acetylene gas, carbon dioxide, diatomaceous earth, gasoline (stored in a gasoline can), motor oil, oxygen, and seal-tek petroleum based sealant. No evidence of releases or mishandling of these materials was reported.

No evidence of USTs was observed when the Phase I ESA was performed. The Phase I states, however, that DEQ records indicated that one 2,000-gallon gasoline UST had been decommissioned

by removal in October 1987 (UST #1 discussed below). However, no documentation on the UST removal or confirmation soil sampling was identified when the Phase I ESA was performed.

USTs. As discussed above, historically there were 15 USTs at the SIUF, with 1 located on OU3: UST #1 (Berth 307, Crosby & Overton). Figure 35 shows the location of the UST. This UST was a 3000 gallon gasoline tank installed in 1966. It was removed in 1987 and no contamination was found (Bridgewater Group, 2000c).

4.2.2 Operations

The PSY was actively used for ship repair, outfitting, and hoteling (i.e., moorage of out-of-service ships) throughout the subject time period (1950 through 1995). Ship repair processes included ship conversions, overhauls, maintenance programs, damage repair, and equipment repair. Operations at the PSY consisted of the repair and maintenance of privately owned and government vessels from the United States and overseas. During its tenure, PSY was the only publicly owned, privately operated major shipyard in the United States.

A Port publication entitled "Portland Ship Repair Yard" states that the facility consisted of four dry docks (Dry Docks 1, 2, 3, and 4), 14 berths (repair berths: 301 through 305 and 312 through 314, lay-up berths 306 through 311), and 17 cranes (Port, 1979). Ship repair and maintenance were conducted on the dry docks and at berths along the perimeter areas of the shipyard. The dry docks were used to raise vessels out of the water to perform hull repair, maintenance, painting, and other dry lay-up ship repair tasks. The berths were outfitted with electrically powered cranes in a variety of sizes and lift capacities. The cranes operated on tracks that were laid along the berths that allowed movement between the berths. The berths were also used for maintenance that did not require lifting the vessel out of the water. This included cleaning tanker vessel ballasts, engine maintenance, outfitting, deck painting, and other activities.

Contractors worked on ships in the dry docks. Work included welding, painting, abrasive blasting (dry sandblasting and hydroblasting), repairing the ship's screws and shaft, zinc anode replacement, outside hull refurbishment, and concurrent interior work.

Appendix G includes a list of currently known ships repaired by contractors at the facility, generally between 1950 and 1995.

4.2.2.1 Abrasive Blasting

Only about 25 percent of the abrasive blasting occurred at the dry docks. The remainder occurred at the berths (mainly interior blasting of tanks) and at several upland locations. Upland abrasive blasting of parts and equipment was conducted in or near Building 73 after it was constructed in 1980 and 1981. Copper slag was the principal blasting abrasive used at PSY (Port, 1999). Environmental compliance practices during this time are discussed in Section 4.2.3.

4.2.2.2 Painting

Like abrasive blasting, most of the painting did not take place on the dry docks; more painting occurred at the berths or in upland areas. Historically, most of the paint was delivered directly to and stored near ships when they arrived. Small quantities of paint were stored and used to paint small items in Building 73. Environmental compliance practices during this time are discussed in Section 4.2.3.

4.2.2.3 Support Services

The shipyard's upland areas, or yard, housed the support services for both ship repair operations and maintenance of the shipyard infrastructure. The activities or operations in the shipyard's upland areas included:

- Metal machining (for facilities maintenance and ship repair);
- Carpentry;
- Electrical shop;
- Steel fabrication;
- Propeller repair and services;
- Mobile equipment maintenance;
- Paint storage and painting operations;
- Abrasive blasting (grit and steel shot) and surface preparations; and
- Berth and ship rigging storage and support.

4.2.2.4 BWTP

Beginning in 1973, oils and oily water originating from vessels (ballast water, engine rooms, etc.) and related contractor equipment (tanks, hydraulic equipment, etc.) were collected at the BWTP and treated to separate the oil and water. As discussed above, the original BWTP consisted of a series of tanks and ponds used for physical product separation. Following testing to ensure ballast water was acceptable for the BWTP, the initial process was as follows:

1. Ballast water was pumped from vessel to storage tanks where primary oil/water separation took place by gravity settlement.

2. Separated wastewater was transferred to cookers where chemical coagulants were injected and the temperature was raised to speed up separation process.

3. Oil that had risen to surface of the cooker tanks was skimmed off and fed to a storage tank (some water continued to settle out and was re-circulated through the cooker).

4. Wastewater from the bottom of the cookers went into a gravity separator while the remaining oil that had risen to the top was skimmed off and re-circulated through the cookers.

5. Water from the separator was tested to meet water quality standards and sent to a chemical mixing trough where it passed through a burlap filter and underwent adjustment for pH.

6. Pretreated effluent was pumped into a pond and either discharged to the City of Portland (City) sewer system or pumped to the river under a National Pollutant Discharge Elimination System (NPDES) permit if the oil content was below 10 ppm.

7. The collected oil was sold for reclamation.

Around the same time the Port was expanding the shipyard with an additional dry dock facility, plans for a new BWTP were initiated. Added capacity at the BWTP was necessary to accommodate the larger vessels (mainly oil tankers) that were anticipated to utilize the new dock. Further, more efficient techniques and methods for oil/water separation had been developed since the initial plant's construction. Certain features of the old plant were decommissioned, including the separation ponds, and the new plant was constructed in 1979. The new BWTP consisted of connection stations, receiving lines, holding tanks, a heating plant, decant tanks, separators, processed water storage tanks, oil storage tanks, and a water quality testing lab (Port, 1979). The incoming oily water was temporarily stored in one of six 24,000-barrel capacity storage tanks, and the oil was extracted by natural separation, addition of chemicals, and heating of the waste water. Depending on analytical results, the treated water was either pumped to the City of Portland (City) sewer system or discharged to the Willamette River under a NPDES permit (see Section 4.2.3.2).

Typical products handled by the new BWTP included ballast water removed from Alaskan oil tankers under repair. In that scenario, ballast water was sometimes stored in BWTP holding tanks and then returned to the tankers once repair work was finished because the ballast water contained economically valuable quantities of oil. Otherwise, the separated oil was periodically collected and sold to contractors for reclamation (as opposed to recycling back to the tankers).

Prior to being sold for reclamation, profiling of the oil was conducted by the Port's testing lab. Profiling included flashpoint, solids, and water content. Use of detergents, solvents, and cleaners was restricted for material being discharged to the BWTP. This was based on the impacts these materials would have on the flashpoint, energy content, and quality of the oil for sale. Strict oversight was placed on contractors discharging to the BWTP with respect to the material and tank cleaning products. As such, the preferred cleaner was either gasoline or diesel. If a contractor wanted to use a different material, they were required to provide testing data demonstrating the cleaner would not negatively impact the quality of the oil.

In 1991, the Port outlined a procedure to begin accepting marine waste water generated outside the shipyard for treatment at the BWTP (Port, 1990f and 1992). The Port stated that it would accept marine waste water generated outside the shipyard only by direct application from the company generating the product. Marine waste water or "oily slops" had to meet the Port's standards for acceptability. Non-marine waste water would not be accepted. Generators were required to contract with a Port-approved hauler to transport materials to the BWTP. All users of the BWTP, including truck haulers had to apply for and be granted a "Right of Entry Permit" and agree to only use approved tank cleaning products.

The BWTP was, and remains, a critical marine facility within the Portland Harbor in that the Coast Guard requires that facilities be available to manage oily water and ballast water for ships entering waters of the United States.

4.2.3 Environmental Compliance

Between 1949 and 1996, the Port owned and operated the PSY. A Port document entitled "Portland Ship Repair Yard" states that the Port was responsible for maintaining the yard and major equipment, providing utilities, and overseeing ship moves on and off of the dry dock (Port, 1979). Actual ship repair work was performed by local private contractors who rented these facilities from the Port. As discussed in Section 4.3, a number of contractors performed ship repair activities and a number of tenants performed industrial operations in leased facilities.

Environmental compliance was a part of the Port's operations throughout the history of the PSY – at first as a part of the Port's standard operating procedures (e.g., tariffs in agreements with contractors) and then conforming to environmental regulations as new rules were promulgated.

4.2.3.1 Pollution Control

Beginning as early as 1952, the Port released Swan Island tariffs detailing dry dock rates and rules and regulations that included environmental provisions. Tariff 16, issued July 1, 1952, demonstrates the relationship between the Port and contractors in that respect, and included the following key compliance requirements (Port, 1952):

- Oil Disposal: Vessels must make provisions that fuel oil will not be discharged while on dry dock or afloat at wharves. The Port reserves the right to remove oil discharged in violation of this rule by any means it chooses and the cost of such removal or attempts to remove such oil will constitute a charge against the vessel. Vessel and contractors will be held responsible for acts of their employees.

- Safety Measures – Sanitation: Vessels using the dock or wharves must at all times keep the same clear of dirt and rubbish.

- Storing Supplies: No kerosene, gasoline, solvents, paints, paint thinners, or other explosive or flammable materials will be allowed to remain on the docks or wharves. All such material must be stored in a manner approved by the government officials having jurisdiction.

In an effort to address potential pollution issues at the shipyard, a Safety and Pollution Control Committee (Committee) was formed in approximately 1971. Port records (Port, 1971a) indicate that along with the Port, membership included Willamette Tug & Barge, Northwest Marine Iron Works, Shaver Transportation, U.S. Coast Guard, Albina Engine & Machine Works, Willamette Iron & Steel Co., and Pacific Abrasives (Pac-Mar Services).

By consensus, the Committee developed pollution control methods and the Port provided facilities. A subset of the Committee, including the Port, Albina Engine & Machine Works, Northwest Marine Iron

Works, Pac-Mar Services, and Willamette Iron & Steel Co., generated a report characterizing some common operational practices and identifying pollution control methods and facilities required to be practiced by shipyard contractors (Port, 1971a):

- All contractors should use steam and heat from the Port's boilers as the system was equipped with automatic combustion control.
- The Port and contractors must discontinue incinerator and open burning.
- The Port had a sandblasting shed for use by contractors; at the time, most of the sandblasting and sweeping was performed by Pacific Abrasives (Pac-Mar) acting as a primary subcontractor.
- Spray painting and coating operations were to be confined to approved shops with suitable ventilation for filtering.
- Chemical spraying for weed control was to be in strict compliance with state and federal requirements.
- The yard had one valve cleaning tank that contained cresylic acid; it was approved for use by the Oregon State Accident Prevention Division.
- All sanitary sewage from the shipyard and from vessels was to go to the City.
- Used oil, thinner, and other mineral waste were collected in containers and hauled from the shipyard for disposal.
- Dry docks were to be cleaned of sand deposits at regular intervals or when needed, and the waste material was to be hauled from the shipyard. A December 8, 1971 letter indicates that waste material was previously deposited along the bank on the lower end of Swan Island for several years; the material may have been copper slag used for sandblasting (Port, 1971b). Based on the available information, the copper slag was probably placed in the area where the ballast water treatment plant is now located. As will be discussed below, this area was investigated as part of the RI. The letter states that the Port considered covering the material with waste sand dredged from the river as part of an excavation project. The letter does not identify the specific location where the waste material was placed. A November 23, 1971 letter from the Portland State University Oregon Student Public Interest Research Group (OSPIRG) mentions a "copper slag landfill" located at the shipyard (OSPIRG, 1971).
- Contaminants generated from boiler and circulating systems of vessels were to be pumped into holding tanks and removed to a suitable disposal location.
- Steam cleaning in the area that was previously used (location not identified) was to be discontinued to prevent residues from entering the river.
- Outlet pipes from catch basins were to be placed above the bottom of the catch basin to trap material; steam cleaning and paint cleanup areas were to be kept away from storm drains.

- Contractors, marine transportation companies, and the Port, along with the Coast Guard, were to use improved procedures and equipment to prevent petroleum leakage or spillage into the river.

BWTP

In 1974, the Port established an operations manual for oily waste and water transfer from ships to the BWTP (Port, 1974a). The manual was signed by the major users of the PSY, including Albina Engine & Machine Works, Northwest Marine Iron Works, Pac-Mar Services, Willamette Iron & Steel Co., and the Port. It included specific requirements and procedures for the following:

- Responsibilities of the Port and contractors;
- Products allowed for transfer – waste oil and water only;
- Personnel required – five men required during transfer including a on-shore supervisor, on-shore operator, shipboard supervisor, shipboard pump operator, and on-shore valve operator;
- Emergency contact information;
- Watchman aboard ship to prevent unauthorized entry to ships;
- Communications both during transfer and in the event of an emergency;
- Containment/emergency response equipment on-hand including absorbent, drip pans for use during transfer, containment boom, large and small skimmers;
- Emergency shut down procedures;
- Transfer procedures such as operating pressure, pipe assembly, operator training, and equipment storage;
- Emergency response; and
- Supervisor training.

The BWTP operations manual was updated in 1982 (Port, 1982c). It contained generally the same information summarized above, but with modifications to reflect changes in equipment, roles and responsibilities, and enhanced procedures.

In 1990, operations for the BWTP were integrated into an overall PSRY Instruction Manual (Port, 1990a, 1990b, 1990c, 1990d, 1990e, and 1990f).

In 1991, the Port informed users of the BWTP that the Port would begin testing all truck transfers for a variety of chemicals prior to accepting discharges to the plant (Port, 1991a).

Painting and Sandblasting

In 1977, the Port, in cooperation with DEQ, developed standard operating procedures (SOPs) for shipyard sandblasting (Port, 1988a). After development of SOPs, however, the Port continued to

evaluate improved methods for sandblasting and practical treatment methods for sandblast emissions (Port, 1978).

In April 1988, the Port identified the need to improve contractor compliance related to paint overspray and sandblasting and, therefore, updated the SOPs (Port, 1988a). Overspray had impacted adjacent property owners by leaving deposits on facilities and automobiles. The Port subsequently established rules and guidance for environmental compliance that were implemented by all contractors, tenants, and users of the shipyard (Port, 1988b). The document addressed paint overspray, fugitive dust emissions, and water quality impacts during ship repair and other activities; the Port stated that it would enforce rules and issue penalties to contractors and/or tenants for violations or non-compliance, but would accept no responsibility for environmental nuisances and violations of state regulations when the violations occurred without Port knowledge.

Environmental controls were identified to limit impacts of paint overspray at the dry docks and repair berths 301, 309, 310, and 312; to prohibit vessel painting at lay berths 306, 307, 308, 311 and 315; and to only allow painting at other berths under certain weather conditions. Environmental controls for fugitive dust emissions included limiting exterior sandblasting of vessels or vessel parts to dry docks; repair berths 301, 309, 310, and 312; within sandblast buildings; or in designated yard areas. To the extent possible, all land side sandblasting was to be conducted inside DEQ-approved sandblast buildings with properly controlled exhaust systems. Any sandblasting performed outside was to be performed behind temporary curtains, and all sandblast debris was to be removed and properly disposed of by the contractor.

Finally, contractors were required to control sandblast debris and paint overspray by capturing the material before it entered the river. The Port's Shipyard Manager had the authority to interrupt contractor sandblasting and painting operations when DEQ and/or the Port found the activity to be in violation of state air quality regulations, state and federal water quality regulations, or the operations may have a direct impact to adjoining properties.

4.2.3.2 Waste Water Discharge Permits

Waste water discharges at the PSY have been permitted continuously since 1975. The following summarizes the waste water discharge permits during this period.

Permit No.	Application Rec'd by DEQ	Effective Date	Expiration Date	Permitted Discharge	Discharge Limitation Parameters and Other Requirements
1901-J	4-Jun-73	12-Feb-75	30-Jun-79	001 - Compressor Cooling Water 002 - Condensor Water, Boiler Blowdown Unspecified - Treated Ballast Water; Uncontaminated Storm Water	Flow, temperature, pH, oil & grease

Permit No.	Application Rec'd by DEQ	Effective Date	Expiration Date	Permitted Discharge	Discharge Limitation Parameters and Other Requirements
3086-J	11-May-79	15-Jan-80	30-Sep-84	001 - Compressor Cooling Water 002 - Condensor Water, Boiler Blowdown 003 - Treated Ballast Water	Flow, temperature (001 and 002), pH, oil & grease, TSS (003)
3862-J	11-Jun-84	26-Jul-84	31-Jul-89	001 - Compressor Cooling Water 002 - Condensor Water, Boiler Blowdown 003 - Treated Ballast Water	Flow, temperature (001 and 002), pH, oil & grease, TSS (003)
100628	1-Aug-89	15-Dec-89	31-Oct-94	001 - Backup Compressor Cooling Water 002 - Backup Condensor Water, Boiler Blowdown 003 - Treated Ballast Water	Flow, temperature (001 and 002), pH, oil & grease, TSS (003); procedures for cleaning dry docks
101393 (1200-L)	28-Dec-93	16-Jul-96	30-Jun-01	001 - Treated Ballast Water 002 - Treated Dry Docks Storm Water and Process Waste Water	001 - Flow, pH, oil & grease, TSS; 002 - pH, oil & grease, TSS, copper lead, zinc; Dry dock BMPs

Limited information was found about compliance with these permits. The following summarizes currently known information.

- In 1990, treated ballast water was discharged to the Willamette River approximately once each month (DEQ, 1990). Treated water that was not acceptable for discharge to the river was stored and disposed approximately once per year to the City sanitary sewer system (under City of Portland Industrial Waste Discharge Permit No. 400-096).

- The DEQ PA (1990) refers to an October 31, 1985 Notice of Violation, but little information is provided.

- On October 9, 1989, a PSY subcontractor (Blasco, subcontractor to Cascade General) was issued a Notice of Noncompliance related to NPDES Permit #3862-J. As a result of a complaint, the DEQ conducted an inspection of sand blasting operations on September 29, 1989. Blasco was observed sandblasting a barge without sufficient controls at Berth 302 and spent sand blast material was entering the river. The subcontractor was required to implement procedures to prevent sand blast materials from entering the river (Oregon DEQ, 1989).

- NPDES Waste Discharge Permit No. 101393 was transferred from the Port to Cascade General on September 2, 1996.

4.2.3.3 Storm Water Discharge Permits

The first waste water discharge permit at the PSY (Permit No. 1901-J issued in February 1975) authorized the discharge of uncontaminated storm water. Subsequent waste water discharge permits did not refer to storm water. The Port received a storm water NPDES permit for the PSY on September 24, 1991 (Storm water Permit No. 1200-L with an expiration date of September 30, 1996). The permit required the preparation of a storm water pollution control plan that identified activities, discharge locations, storm water controls, spill prevention, and maintenance, among other items. The permit limited oil and grease, pH, and toxicity of the discharge.

4.2.3.4 Air Contaminant Discharge Permits

The following table is a summary of the history of the Port's air contaminant discharge permits. It should be noted that contractors conducting painting operations or conducting other activities with potential for air contaminant discharges were required to obtain their own permits through DEQ.

Permit No.	Permit Type	Effective Date	Expiration Date	Permitted Areas	Covered Discharges
26-3004	Air Contaminant Discharge Permit (limited source)	11/14/1978	10/1/1988	Boiler - residual oil from fuel burning equipment	Particulate & SO2
26-3224	Air Contaminant Discharge	6/6/1986	5/1/1990	CUB boilers, ship painting, and BWTP storage tanks	VOCs
26-3224 (modified)	Air Contaminant Discharge	11/29/1998	5/1/1990	CUB boilers, ship painting, and BWTP storage tanks	VOCs and particulates
26-3224 (renewed)	Air Contaminant Discharge	7/27/1993	5/1/1997	CUB boilers, ship painting, BWTP storage tanks and fuel burning equipment	CO2, NOx SO2, VOCs and particulates
26-3224 Addendum 1	Air Contaminant Discharge	5/4/1995	5/1/1997	CUB boilers, ship painting, BWTP storage tanks and fuel burning equipment	CO2, NOx SO2, VOCs and particulates
26-3224 Addendum 2	Air Contaminant Discharge	10/4/1995	5/1/1997	CUB boilers, ship painting, BWTP storage tanks and fuel burning equipment	CO2, NOx SO2, VOCs and particulates
26-3224 Addendum 3	Air Contaminant Discharge	2/23/1996	5/1/1997	CUB boilers, ship painting, BWTP storage tanks and fuel burning equipment	CO2, NOx SO2, VOCs and particulates

Addendum 3 to Permit 26-3224 above confirms the transfer of the permit from the Port to Cascade General. It is presumed that Cascade has maintained an air discharge permit since that time.

4.2.3.5 Spill Prevention

The Port has prepared and implemented Oil Spill Prevention Control and Countermeasure (SPCC) Plans in accordance with regulatory requirements. A review of Port records indicates an SPCC Plan was in place as early as 1974. A copy of the plan dated April 1981 covered the boiler building, BWTP, CUB, and "other possible spill areas."

The DEQ PA references the Port's then current SPCC Plan that included the BWTP, piping and transfer system, CUB, card lock fuel system, and other potential spill areas.

The DEQ PA states that "plans have been developed and implemented" to address sand blasting activities (DEQ, 1990).

The shipyard has maintained a variety of spill containment and cleanup equipment including two water-borne oil skimmers for oil spill and floating debris cleanup, containment booms, pumps, and absorbent. In addition, outside contractors have been on-call to provide additional equipment including booms, boats, response trailer, pumps, vacuum truck, and absorbent.

4.3 Facility Users

Appendix C lists the businesses that occupied the various buildings located within the SIUF boundaries. Appendix D summarizes the types of activities and operations that were performed by the various businesses.

4.3.1 Lease Arrangements/Obligations

In general, the Port entered into agreements with primary contractors to conduct the actual ship repair activities. Contractors were given the right to use shipyard facilities, in common with others, to operate their business in their own way. The Port, in turn, agreed to maintain and operate the facility and develop a rehabilitation program for the "old yard." For example, a 1982 Ship Repair Yard Use Agreement between the Port and FMC Marine and Rail Equipment states that the Port was the owner of the shipyard and that the Port had entered into Common Use Agreements with prime ship repair contractors (Port, 1982a). That agreement defined a Prime Ship Repair Contractor as a business or company engaged in ship repair, conversion, or construction that used shipyard facilities and charged for such services directly to a ship owner or operator. The contractor, in common with all other prime ship repair contractors and other users of the shipyard, utilized the shipyard and its appurtenances to conduct its business. The contractor was required to maintain and keep the portions of the shipyard that they used neat, clean, and in orderly condition and free from litter, debris, refuse, petroleum products, or grease. The Port agreed to maintain and operate the shipyard and all common user and public appurtenances, facilities, and services.

Other tenants may also have used the facilities, either as tenants of the prime contractors supporting shipyard activities, or as tenants of the Port for other industrial activities.

4.3.2 Contractors

Based on a review of various historical documents, the following prime contractors used Port facilities:

- A July 16, 1963 memorandum states that contractors at the shipyard included Northwest Marine Iron Works, Albina Engine & Machine Works, and Willamette Iron & Steel Co. (Winn, 1963).
- An April 15, 1971 document identified past and present pollution control methods and facilities used by shipyard contractors (Port, 1971a). Contractors involved in the program included Albina Engine & Machine Works; Northwest Marine Iron Works; Pac-Mar Services, Inc.; the Port; Willamette Iron & Steel Co.; Willamette Tug & Barge; and Shaver Transportation Co.
- Contractors operating at the shipyard in 1974 included Albina Engine & Machine Works, Northwest Marine Iron Works, Pac-Mar Services, and Willamette Iron & Steel Co. (Port, 1974a).
- In 1982, the Port Commission approved the establishment of a Shipyard Use Agreement that documented the relationship between prime ship repair contractors and the Port (Port, 1982b). In the years that followed, agreements were developed with Northwest Marine Iron Works, Cascade General, L & S Marine, Lockheed Shipbuilding Corporation, Pacific Marine Ship Repair, Gunderson, Petrotek, Norvac, C.H. Murphy, Riedel International, Sun Refining and Marketing Company, West State, Inc., Dillingham Ship Repair, Crosby & Overton, Marine Ways Corporation, and FMC Corporation.

4.3.3 Tenants

Appendix C summarizes the tenants that leased building space during the time that the Port was the owner and operator of the PSY. The information in Appendix C is based on best available information and was taken generally from leases and lease information summary lists from specific points in time. The listed tenants may have leased buildings during times other than those listed in the appendix, and they may not have had continuous leases during the listed time frames.

4.3.4 BWTP Users

Based on 1991 Port letters (Port, 1991a, 1991b), users of the BWTP included West Coast Marine Cleaning, Inc.; Pacific Coast Environmental, Inc.; Spencer Environmental Services, Inc.; Lockwood Industries, Inc.; Chempro; Allstate Industrial & Marine Cleaning, Inc.; West State, Inc.; Northwest Marine, Inc.; Cascade General; Knappton Corp.; Tidewater Barge Lines; Shaver Transportation; Western Transportation; Port of Astoria; and Sundial Marine.

In 1993, the following companies had current right of entry permits for the Port's BWTP: Allstate Industrial and Marine Cleaning, Inc.; Foss Environmental Services, Inc.; Pacific Coast Environmental, Inc.; Spencer Environmental Services, Inc.; Lockwood Industries, Inc.; West Coast Marine Cleaning, Inc.; and Riedel Environmental Services, Inc. (Port, 1993).

4.4 Potential Areas of Concern

Appendix F is a summary of documented releases and spill events as identified in records of the NRC, DEQ spills and releases information, and Port records. It includes information on specific events that occurred between 1943 and 2005. Based on the release/spill history together with the historical information summarized in Section 4.2 and Appendices B through E, this section identifies potential areas of concern from the PSY period of operation of the SIUF. Potential areas of concern for the SIUF throughout the history of operation are summarized in Section 7

4.4.1 OU1

4.4.1.1 Building 4

A variety of ship repair activities occurred in this building such as welding, grinding, sand blasting, and fabrication, as summarized below. These activities involved a variety of chemicals of potential concern such as metals as well as petroleum and PCBs from equipment used for these operations. This area was identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

- A 1953 equipment layout drawing for Building 4 shows that welding machines were located along the walls separating Bays 1, 2, 3, 5, 6, 7, 8, 9, 10, and 11. A metal grinder was located along the walls separating Bays 3 and 4 and Bays 10 and 11. A plate bending machine was located along the wall separating Bays 9 and 10. Finally, a small substation was located along the wall separating Bays 6 and 7. This drawing was previously submitted to DEQ in the July 13, 2001 Phase IB Work Plan Addendum, Portland Shipyard Remedial Investigation (Bridgewater Group, 2001).

- In 1975, the Port allowed Crosby & Overton to erect and operate a 50- by 100-foot temporary sandblasting shed between Building 4 and Building 63 (Port, 1975a).

- Marine Vacuum Service, Inc., leased the interior of the east end of Bay 1, including two office spaces, a shop, and the adjacent asphalt-covered parking lot. Environmental inspections performed on December 12, 1995, and January 2, 1996, found the floor and walls of the shop to be streaked with oil; two floor drains were observed in the shop space. Three 55-gallon drums, each partially filled with unknown materials, were stacked at the far northeastern corner of the building. Asphalt pavement in the parking area was degraded and was oil stained (HAI, 1996a).

- HAI performed an environmental inspection of Bay 1 on January 31, 1995 (HAI, 1995a). The bay was vacant at the time of the inspection. No significant environmental issues were noted.

- HAI performed an environmental inspection of Bay 1 on June 30, 1995 (HAI, 1995c). The space was vacant and no visible evidence of residual hazardous material contamination was observed with the exception of oil stains on the floor.

- On April 1, 1983, a PCB transformer leaked onto the concrete floor of Bay 1. The release was reportedly cleaned up (Appendix F).

- On February 6, 1995, an oil spill was observed in Bay 2, occupied by West State, Inc. The quantity of oil released and the affected media is not known (Appendix F).

- HAI performed an environmental inspection of Bay 4 on June 28, 1995. The bay was vacant at the time of the inspection. With the exception of oil stains on the floor, no visible evidence of residual hazardous material contamination was observed (HAI, 1995c).

4.4.1.2 Building 10

On January 31, 1995, HAI performed an environmental inspection of space leased by Mar Com, Inc. (HAI, 1995b). The inspection observed drums of corrosive material and an unknown material located in the northeast corner storage area of Bay 2, waste welding slag or blasting grit on the floor in the northeast corner storage area of Bay 2, and poor house-keeping practices in Bays 2 and 3. No evidence of imminent environmental impacts was observed.

Mar Com, Inc., leased Bays 2 and 3 between February and early October 1995 (HAI, 1995e). An environmental inspection performed on October 9, 1995, found drummed hazardous materials improperly stored in Bay 2 and waste slag and grit was spread across the floor of Bay 2. Building 10 is one of the hazardous waste storage areas identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

4.4.1.3 Building 43

Building 43 was occupied by AMSCO Refrigeration, Inc., for approximately eight years until December 28, 1995 (HAI, 1996b). AMSCO leased all of Building 43 and an asphalt-covered area approximately 50 feet wide along the entire west side of Building 43 that was used to store equipment and supplies. Environmental inspections performed on December 12, 1995, and January 2, 1996, found over 100 containers (drums, jugs, bottles, cans, gas canisters) of potentially hazardous materials, used oil, solvents, paints, refrigerants, and other supplies. Also, a sandblast booth was located on the ground floor of the shop. The building floor was oily and stained; no floor drains or sumps were observed. The ground was stained in some locations, particularly in the northeast corner of the area, where a white, possibly caustic, spill stain approximately 100 square feet in area was observed. Liquids spilled inside the building or within the outside storage area could have flowed into one of two nearby storm drains. Building 43 was identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

4.4.1.4 Building 60

In a 1952 oblique photograph, an overturned drum with an unknown pooled substance was observed. The drum was located on the east side of Building 60 (Appendix F). This area was investigated as discussed in the RI/FS Work Plan (Bridgewater Group, 2000c).

4.4.1.5 Building 73

In a 1975 letter, DEQ issued to Dillingham and Crosby & Overton a cease and desist order regarding sandblasting operations (Port, 1975b). At the time, plywood dust barriers were being used. Crosby & Overton planned to close off the ends of their sandblast building and install a fog mist dust collector. The Port planned to study the possible construction of a sandblast building with bays that could be leased to contractors. The Port subsequently constructed Building 73 for that purpose in 1980 and 1981.

In-Mar, Inc. leased a paved area on the south side of Building 73 between June 1994 and May 1995, to store ship paint (HAI, 1995d). An environmental inspection performed on August 10, 1995, found dried paint on the pavement.

Building 73 was identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

4.4.1.6 Ballast Water Treatment Plant

In 1988, Ric Volpel with DEQ contacted Rollie Montagne at the Port regarding a complaint that Harbor Oil had shipped oils containing solvents for processing at the shipyard, presumably in the BWTP (Port, 1988c). Nothing more is known on this matter.

Table 8 in the RI/FS work plan identifies a soil removal action that was performed in 1993 and 1994 for soils containing total petroleum hydrocarbons (TPH) and PCBs (Bridgewater Group, 2000c). In addition, in 1991 the Port removed 10 cubic yards of soils containing diesel that were encountered during the installation of a new sump at the BWTP. The soils were land disposed at the Hillsboro Landfill (HAI, 1991a).

On April 11, 1982, 900 barrels of water containing 13 mg/L oil were accidentally released from Tank No. 7 (Appendix F). On May 25, 1995, an oil spill occurred at the truck pumping area. The spill was reportedly cleaned up (Appendix F).

The BWTP was identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

4.4.1.7 West States Incorporated (WSI) Storage Area

In 1995, the Port requested that WSI address waste materials in containers, tanks, and residue piles that were abandoned when WSI ceased doing business (Port, 1995). Between 1985 and 1994, WSI stored hazardous wastes in a partially-paved and fenced area located southwest of Building 4 and north of Berth 313. Drums of waste and cans of paint were stored in this area. In 1994, a cleanup was performed in this area under DEQ oversight, but no sampling was performed as part of that cleanup (Bridgewater Group, 2000c). The WSI storage area was one of the hazardous waste storage areas identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

4.4.1.8 Substations

As discussed in Section 4.2.1.1, electrical equipment in the substations had varying levels of PCBs. Documented releases occurred at some of the substations (e.g., leaking PCB transformer at Substation 5 – see Appendix F). Figure 24 shows the locations of the SIUF substations. The substations were identified as potential areas of concern and were addressed in the Phase I RI (Bridgewater Group, 2000c).

4.4.2 OU2

4.4.2.1 North Channel Avenue Fabrication Site

Petroleum, fuel, and solvents were stored in tanks and totes during the ARCO construction project. Three ASTs were located along the south side of Building 83. This area was identified as a potential area of concern and was addressed in the Phase I RI (Bridgewater Group, 2000c).

In December of 1989, the Port conducted an ER of the North Channel Avenue Fabrication site (HAI, 1989). The following summarizes key findings of the 1989 ER:

- Visible staining of soil was observed in the vicinity of an oil storage shed located south of Building 83. This shed was used to store drums of petroleum products (motor oil, lubricants, and greases).
- Apparent petroleum staining of the gravel surface east of Building 83 was observed.
- Gasoline and diesel fuel were being stored in two 500-gallon ASTs located south of Building 83; gasoline was being stored in a portable truck-mounted tank in the same area.

A subsequent ER was performed on July 20, 1990 (HAI, 1990). The following additional observations were made:

- There was an area of visible staining near the fabrication shop on the west end of the North Channel Avenue Fabrication Site.
- Sandblast sand was observed on the ground on the west side of the North Channel Avenue Fabrication Site.

4.4.2.2 Employee Parking Lot

No potential areas of concern were identified for the employee parking lot.

4.4.3 OU3

No areas of potential concern were identified for OU3 during this period.

4.4.4 Adjacent Properties

Areas of potential concern are discussed for adjacent properties to the extent that these adjacent properties have the potential to be sources of chemicals that may be detected on the SIUF and to the extent that historical off-site property uses could be identified. This section presents information obtained incidental to the records review for the SIUF.

On November 10, 1965, the Port notified Northwest Marine Iron Works that the City would not permit open burning of industrial rubbish after December 1, 1965. Prior to that time, such wastes were burned on the south side of Swan Island. After that time, waste material was transported off site for disposal (Port, 1965).

In 1951, one gasoline UST was installed by Woodbury & Company on the south side of Building 4 at Bay 9, off of the SIUF (Woodbury & Company, 1951).

Dry Dock 1 (YFD-69). The Port notified the General Services Administration that there were nine PCB type transformers within the shipyard; Transformers 3 through 8 were removed from Dry Dock 1 and stored near Berth 306 waiting disposal (Port, 1985). An undated table titled "Portland Ship Repair Yard PCB Transformers" indicates that all six transformers were 25 Kva transformers and they were disposed of on February 26, 1986. A note on the table indicates that a 5-gallon can of PCB fluid was removed from Dry Dock 1 and was disposed of in April 1986.

Dry Dock 3. An August 18, 1974 memorandum states that the Dry Dock 3 control tower, including Substation No. 6, collapsed into the river (Port, 1974b). Paint was spilled during the incident. A sealed, dry-type transformer (2,000 Kva) in the substation suffered mechanical damage. A September 24, 1974 memorandum states that the substation was removed from the river as part of the overall salvage operation (Port, 1974c).

A September 1985 table of "Portland Ship Repair Yard, Suspect Transformers" lists 16 pieces of electrical equipment that could have contained PCBs. Three were located on Dry Dock 3. An undated table indicates that a 1,000 Kva transformer (manufacturer no. 16121-1) located on the Port side of Dry Dock 3 contained 10 ppm of PCBs.

Dry Docks – General. Historically, cleaning of ships on the dry docks resulted in discharges (e.g., sand blast grit) from the dry docks to the river. Management practices were put in place to address these issues (e.g., Pollution Control Committee in 1971; see Section 4.2.3.1).

Berth 313. In 1988, Ric Volpel of DEQ contacted Rollie Montagne with the Port regarding a complaint about sandblasting at Berth 313 by Northwest Marine and Iron (Port, 1988c).

5. Cascade General Ship Repair Yard – OU1 (1996 through Present)

5.1 Facility Operations and Property Transfer to Cascade General

In 1995, Cascade General was awarded the operations contract for the PSY. Cascade General officially took over facility operations starting on January 1, 1996, but the Port retained ownership of the SIUF property and facilities. In addition to facility operations and maintenance, Cascade General also took over responsibility for environmental permitting requirements, as discussed below. As the facility operator, Cascade General was responsible for overseeing contractor and tenant activities. Figure 40 is a 1997 aerial photograph for the SIUF.

In June 2000, the Port sold the portion of the SIUF defined in the Agreement as OU1 to Cascade General, including 57 acres of uplands and certain submerged and submersible lands adjacent to OU1. The Port retained ownership of the property referred to as the North Channel Avenue Fabrication Site and a portion of the employee parking lot (OU2), and the properties located at 5420 North Lagoon Avenue and the adjacent parcel that extends to the northeast to the ordinary high water line for Swan Island Lagoon (OU3).

The 14,000-ton YFD-69 is still in use at the shipyard (Dry Dock 1). The Port was leasing YFD-69 from the Navy and Cascade General was managing it under an operating agreement with the Port (Port Agreement No. 95-159). In February 2004, the Port and the Navy executed a novation agreement which recognized Cascade General as the shipyard owner and the operator of YFD-69. The novation agreement effectively arranged for Cascade General to assume the Port's lease (Port Agreement No. 80-009) of YFD-69, noting that Cascade's purchase of the dry dock from the Navy was imminent, pending ongoing negotiations. The Port's obligations under the lease were terminated at that time.

5.2 Historical Narrative

5.2.1 Facility Development and Operations

During the time that Cascade General operated the PSY, over-water and upland activities associated with ship repair were similar to the activities conducted prior to 1996: Most of the facilities were unchanged or upgrades did not substantively change the way the facilities were used.

One substantive change that occurred after the Port transferred shipyard operations to Cascade General was the completion of the dry dock storm water treatment system in February 1997. The treatment system included a 100,000-gallon holding tank, clarifier, pH adjustment unit, and sand filtration unit. It was designed to treat "storm water" generated during the raising of the three dry docks (Dry Docks 1, 3, and 4). Treated effluent was discharged to the Willamette River through Outfall 002.

now goes to City Sanitary Sewer

In June 2000, Bridgewater Group performed a site reconnaissance of OU1. The following summarizes observations that were made during the site reconnaissance (Bridgewater Group, 2000a).

5.2.1.1 Ballast Water Treatment Plant

The layout of the current BWTP is shown on Figure 2. According to Cascade General, recent modifications to the BWTP include adding insulation to tanks and equipment, and installing new manifolds. New ASTs added to the BWTP include three 18,000-gallon stainless steel and six 17,000-gallon steel tanks. All of the tanks at the BWTP are served by secondary containment.

5.2.1.2 Building 4

Columbia Wire and Iron (CWI) had previously painted metal parts outdoors near the northeast corner of Building 4 (i.e., near the back entrance to Bay 1). During the site reconnaissance, the painting area was covered with a tent and the asphalt was covered with metal plates. The storm drain, however, was partially open and paint residuals were observed on the asphalt near the storm drain.

Stained asphalt was observed near the entrance to Bay 9 of Building 4. Within Bay 9, the concrete beneath many pieces of metal fabrication equipment (e.g., presses, brakes, shears and rollers) was stained.

According to an August 2, 1996 City Bureau of Fire inspection report, Prentice Machine Works (Bays 9 and 10) was requested to remove a 55-gallon barrel of gasoline and stop refueling a forklift and pick-up truck in the building (City of Portland, 1996).

5.2.1.3 Building 9

According to an August 2, 1996 City Bureau of Fire inspection report, Pacific Marine Corporation was requested to remove 800 gallons of Pennsalt No. 3012 Solvent – Emulsifier No. 313 Oil Side Cleaner and a 55-gallon drum of gasoline from the building (City of Portland, 1996).

5.2.1.4 Building 10

The paved area west of Building 10 was being used to stage old vehicles and hydraulic lifts and cranes. Stained asphalt was observed beneath a number of the vehicles, lifts, and cranes staged in this area.

According to an August 2, 1996 City Bureau of Fire inspection report, there was a diesel-fired dryer in the building in an area used by Pacific Abrasives (City of Portland, 1996).

According to the same Bureau of Fire inspection report, Northwest Marine Iron Works was requested to stop storing marine paint, zinc, chromate, vinyl, antifouling, roll-roofing, and linoleum in Building 10.

5.2.1.5 Building 50

According to an August 2, 1996 City Bureau of Fire inspection report, Albina Engine & Machine Works was storing paint thinner in a 55-gallon barrel (City of Portland, 1996).

5.2.1.6 Building 63

The concrete floor beneath a rack used to hold 55-gallon drums of solvents, oils, and kerosene was visibly stained. The containment system beneath the rack appeared to be effective in controlling releases to the concrete, but not if drum spigots extended beyond the side of the containment system as was observed during the site reconnaissance.

5.2.1.7 Building 73

Several recent spills of paint or catalyst were observed on the asphalt in the paint storage area located on the south side of Building 73. According to the Port, releases of this type were observed during several of the monthly site visits the Port conducted starting in late 1998. Cascade General assigned a full-time person to manage the area which improved the condition of the paint storage area.

A sandblast booth was located east of Building 73. Staining was observed on the asphalt near the west end of the booth. According to the Port, the magnitude of the staining in this area had increased since late 1998.

5.2.1.8 Port of Portland Shops

According to an August 2, 1996 City Bureau of Fire inspection report, the Port was requested to remove a 55-gallon drum of flammable wood preservative (City of Portland, 1996).

5.2.1.9 Card Lock Fuel System

Staining of the concrete fuel island beneath the diesel fuel pump was observed.

5.2.1.10 Berths 305 and 306

At the time of the site reconnaissance, Steelhead Construction leased portions of Berths 305 and 306 from Cascade General for purposes of constructing houseboats. During the site reconnaissance, the floating shed used by Steelhead Construction for material storage was filled with debris.

Cascade General was storing chemicals in a shed located near the east end of Berth 305. During the site reconnaissance, staining was observed on the concrete floor next to a metal bin filled with containers of chemicals.

Cascade General was storing spill response equipment in a shed just south of the chemical storage shed. The asphalt around the entrance to the shed was visibly stained with paint.

5.2.1.11 Berths 312 through 314

Two pieces of electrical equipment were observed to have leaked or be leaking in the Berth 312 through 314 area. The first piece of equipment was a transformer in Substation 8A near Berth 314 (see Figure 24). The concrete around the base of the transformer was visibly stained. The second piece of equipment was Transformer 4-3 located near Berths 313/314. Fresh transformer oil was observed on the base of the transformer and there was some staining of the underlying concrete pad.

5.2.1.12 Underground Storage Tanks

Historically, there were four USTs at the SIUF during this period, all of them active. Two USTs are located near the CUB (#12 and #13) and two are located in the card lock fueling area (#15 and #16). Figure 35 shows the locations of active and inactive USTs at the SIUF, as of 2000. These tanks are discussed in Section 4.2.1.1. There are no known releases from these USTs during this period. However, a 1993 release from UST #12 was addressed during this period and is discussed below.

In 1993, a leak from an oil return line was found in the concrete vault over UST #12. The vault does not have a bottom and oil was present in soil on top of the tank. In 1998, 24 tons of soil were excavated from beneath the vault and around the UST. About 2 cubic yards of soil with visible staining could not be removed. The maximum depth of the excavation was 13 feet (groundwater is present at depths greater than 20 feet below the ground surface and was not encountered). In January 1999, both USTs passed tightness tests. In 2000, a Heating Oil Tank Risk-Based Closure Report indicating that no further action is required was prepared and submitted to the DEQ (Hart Crowser, 2000).

5.2.2 Environmental Permits

Waste water discharges were controlled under the NPDES Waste Discharge Permit No. 101393 (General Permit 1200-L). The Port originally obtained the permit. The Port transferred the permit to Cascade General, Inc. on September 2, 1996 (see Section 4.2.3.2 for discussion of permit requirements). The permit was modified May 8, 1998, to include dry dock non-contact cooling water. According to DEQ's 1999 File Review Memorandum, the NPDES permit covered eight outfalls (Oregon DEQ, 1999):

- Outfall 001 – Treated water from BWTP;
- Outfall 002 – Treated storm water and process water from the storm water treatment system;
- Outfalls 003 and 004 – Untreated non-contact cooling water from ships in DD4;

- Outfalls 005 and 006 – Untreated non-contact cooling water from ships in DD3; and
- Outfalls 007 and 008 – Untreated non-contact cooling water from ships in DD1.

Figure 41 illustrates the outfall locations.

Besides monitoring requirements, the permit included:

- Update annually and continue application of Best Management Practices (BMPs); BMPs in place at the time included (Cascade General, undated):
  - BMP #1 – Yard Worker Awareness
  - BMP#2 – General Yard Cleanup
  - BMP #3 – No Dumping
  - BMP #4 – Spill Cleanup
  - BMP #5 – Storm Drain Catch Basin Control and Cleaning
  - BMP #6 – Hazardous Materials Handling
  - BMP #7 – Designated Paint Mixing Areas
  - BMP #8 – Over Water Protection
  - BMP #9 – Dry Dock Collection System and Process Water Treatment
  - BMP #10 – Containment of Grit Material and Paint Overspray
  - BMP #11 – Sanitary Waste Disposal
  - BMP #12 – Containment Booms
  - BMP #13 – Abrasive Blast Grit Storage and Disposal
  - BMP #14 – Liquid Discharges to Dry Dock Floors
  - BMP #15 – Floating Dry Dock Cleanup
  - BMP #16 – Dry Dock Water Treatment Facility
  - BMP #17 – Oily Bilge and Ballast Waters
  - BMP #18 – Aquatic Protection While Raising Dry-Docks
- Clean the dry docks thoroughly after working on a vessel, before submergence.
- Place floating containment booms around all ships while transferring fuel; install permanent booms on the inside of the most out-board pier pilings and around all dry dock areas.
- Discharge sanitary wastes to the City sanitary system.

As of November 1998, storm water discharges at the PSY were managed under an NPDES Storm Water Discharge Permit, General Permit 1200-Z. The 1200-Z permit was issued to Cascade General.

As discussed in Section 4.2.3.4, air emissions were initially controlled under the Port's Air Contaminant Discharge Permit 26-3224, which was transferred from the Port to Cascade General through an addendum on February 23, 1996. The permit addressed emissions from coating operations, the BWTP, reclaimed oil tanks, CUB, abrasive blasting outside, abrasive blasting inside, welding, paved industrial roads, unpaved roads, reclaimed oil load out, and the powder coating oven.

Cascade General also operated under ACDP Nos. 20-3103 and 26-3101. Specific details related to those permits, however, were not identified. It is presumed that Cascade General continues to operate under permit 26-3224.

5.2.3 Property Sale to Cascade General

After the sale, Cascade General not only owned the property and facilities, they continued to operate and maintain the shipyard, be responsible for meeting the requirements of various environmental permits, and manage contractor and tenant activities. This is the reason that the Port excluded the following from the investigation Agreement with DEQ:

1. All adjacent sediments, submerged lands, and submersible lands up to the ordinary high water line of the SIUF;
2. Dry docks owned, operated, and maintained by Cascade General;
3. Storm water conveyance systems owned, operated and maintained by Cascade General under NPDES General Permit 1200-Z;
4. Waste discharges permitted under NPDES Permit No. 101393 (1200-L), including treated ballast water from the BWTP, treated dry docks storm water and process waste water, and untreated non-contact cooling water from dry docks and ballast water treatment plant; and
5. Any other activities or operations over which the Port has no control associated with Cascade General or its subcontractors.

The Port retained responsibility for the investigation and remediation of the OU1 uplands in accordance with the Agreement and the 2000 purchase and sale agreement between the Port and Cascade General.

On September 7, 2004, Cascade General, Inc., Shipyard America LLC, and Oregon Industrial Coatings LLC were issued fines totaling $4,216 for hazardous waste violations including failing to conduct/document hazardous waste storage area inspections, failing to properly label hazardous waste containers, and failing to keep hazardous waste storage containers closed.

In 2005, DEQ requested that Cascade General evaluate whether its storm water discharges present a threat to the Willamette River (Oregon DEQ, 2005a). DEQ based its request on Cascade General NPDES permit data which indicated that zinc, copper, and lead concentrations exceeded permit levels over the last several years. During the period from 1995 to 2005, discharges from the three outfalls exceeded benchmark values for copper in 32 out of 48 samples and for zinc in 28 out of 48 samples. DEQ recommended that the evaluation be conducted under DEQ Voluntary Cleanup Program oversight. A Voluntary Agreement between Cascade General and the DEQ has been signed and a project kickoff meeting has been held. The first deliverable, a summary report of the storm water system, was submitted by Cascade General to the DEQ in November 2006 (Sutter, 2006).

5.3 Facility Users

Appendix C lists the businesses that occupied the various buildings located within the SIUF boundaries. Appendix D summarizes the types of activities and operations that were performed by the various businesses.

5.4 Potential Areas of Concern

Appendix F is a summary of documented releases and spill events as identified in records of the NRC, DEQ spills and releases information, and Port records. It includes information on specific events that occurred between 1949 and 2005. Based on the release/spill history together with the historical information summarized in Section 5.2 and Appendices B through E, this section identifies potential areas of concern for OU1 from Cascade General's period of operation of the SIUF. Each of these areas was identified as potential areas of concern and addressed in the Phase I RI (Bridgewater Group, 2000c).

5.4.1 OU1

5.4.1.1 Cascade General Yard Area

The general yard area has been the location of ship repair related activities throughout the period of operation. There have been documented releases (e.g., diesel spill in 1997 – see Appendix F; staining at the card lock fueling area – see Section 5.2.1.9), hazardous waste storage/handling violations (see Section 5.2.3), and the storm water conveyance system is a potential transport pathway to the river for releases in the yard area. Benchmark values for copper and zinc have been exceeded in samples collected from the storm water outfalls (see Section 5.2.3).

5.4.1.2 Building 4

Painting, machining, storage of chemicals, and other industrial activities have been conducted in Building 4. Staining of concrete has been observed (see Section 5.2.1.2).

5.4.1.3 Building 10

Hazardous material storage has occurred in Building 10. Staining of asphalt concrete was observed (see Section 5.2.1.4).

5.4.1.4 Building 73

Surface treatment including sand blasting and painting occur in Building 73. Spills were observed on the asphalt concrete in the area (see Section 5.2.1.7).

5.4.1.5 Berth 305

Chemicals were stored in a shed near the east end of the berth. Staining of concrete and asphalt concrete were observed (see Section 5.2.1.10).

5.4.1.6 Transformers

Staining of concrete bases of transformers was observed at Substation 8A and Transformer 4-3 located near Berths 313/314 (see Section 5.2.1.11).

5.4.2 Adjacent Properties

Steelhead construction leased portions of Berths 305 and 306. A floating shed in Swan Island Lagoon used for storage was filled with debris (see Section 5.2.1.10).

6. OU2 and OU3 (1996 through Present)

6.1 Introduction

In 1995, Cascade General was awarded the operations contract for the PSY, including all of OU1, OU2, and OU3. Their operation began on January 1, 1996. In June 2000, the Port sold OU1 to Cascade General. The Port retained ownership of OU2 and OU3.

6.2 Historical Narrative

6.2.1 OU2

In July 2000, Bridgewater Group performed a site reconnaissance of OU2, including the North Channel Avenue Fabrication Site and employee parking lot (Bridgewater Group, 2000b). As part of the site reconnaissance, Bridgewater Group reviewed aerial photographs taken in 1996 and 1998.

The 1996 aerial photograph taken in July, approximately six months after Cascade General took over operation of the PSY, showed that the only substantive change that occurred between 1994 and 1996 at OU2 was that the equipment or materials that were being staged south of Building 83 in 1994 were removed and replaced by what appeared to be a number of truck trailers or large shipping containers. The truck trailers or shipping containers covered most of the southeast corner of OU2 between Building 83 and the river shoreline. Otherwise, little equipment or material storage was occurring on OU2 in July 1996.

The July 1998 aerial photograph of OU2 showed that considerable material and equipment storage was occurring at OU2. The truck trailers or shipping containers present in 1996 were no longer present south of Building 83; trucks and trailers were then being staged west of Building 83. Materials and equipment were being stored along the southern property line near the river bank. Grit hoppers and old lifeboats were being staged in the central portion of OU2. Piles of wood debris were present in the west-central portion of the OU2. Finally, materials were being stored throughout the far west end of the OU2.

In May of 2000, when the site reconnaissance was performed, the most significant change since July 1998 was that trucks and trailers were no longer being staged west of Building 83. Figure 42 is a 2000 aerial photograph of the SIUF. In addition, more equipment and materials were being stored on OU2 than in 1998.

The following summarizes observations that were made during the site reconnaissance:

- Small amounts of sandblast grit were observed to be present in several locations.
- Petroleum product staining of soils was observed in several locations.
- Soil stockpiles were observed near the west end of the site and just south of North Channel Avenue.

- A large pile of wood debris was present near the west end of the North Channel Avenue Fabrication Site.
- There were no visible signs of a suspected fire training pit located to the north or northwest of the wood debris pile.
- Dry dock blocks, covered with ship hull paints were staged near a pile of wooden spools in the central portion of the North Channel Avenue Fabrication Site.
- A car battery was sitting on the ground to the west of Building 83 next to a large concrete block.

The 1996 and 1998 aerial photographs show that the employee parking lot was used for parking vehicles. The same use was observed during the July 2000 site reconnaissance.

As part of the conditions of the sale of the shipyard, Cascade General removed the wood debris pile, visible sandblast grit, soil stock piles, dry dock blocks, car battery, and other materials and equipment that were observed to be present on OU2 during the July 2000 site reconnaissance.

Since the sale of OU1, OU2 has had three primary uses:

1. The Port leased the main parking lot to Cascade General for employee parking.
2. Starting in 2004, the Port leased the southeastern 7 acres to Freightliner for purposes of staging trucks and trailers.
3. Between 2001 and 2003, the Port leased the central portion of the North Channel Avenue Fabrication Site to Lou Adler who stockpiled, handled, and transported aggregate for construction projects.

6.2.2 OU3

Based on a Phase I ESA completed in 2002 (HAI, 2002), Building 70 was constructed in 1980, and was initially occupied by Crosby and Overton Marine and Environmental Cleaning, Inc. The property was subsequently used by Chemical Processors, Inc., Burlington Environmental, Inc., and Foss Environmental, Inc. Foss Environmental vacated the property in January of 2002. The property has not been used since that time.

In July 2000, Bridgewater Group performed a site reconnaissance of OU3 (Bridgewater Group, 2000b). As part of the site reconnaissance, Bridgewater Group reviewed aerial photographs taken in 1996 and 1998.

The 1996 aerial photograph showed that the Building 70 area, including the yard west of Building 70, was being used to stage trucks and spill response equipment.

Based on the aerial photographs, the major change that occurred between 1996 and 1998 was that the yard area decreased in size. By 1998, the western portion of the Building 70 area that was

previously being used to stage trucks and spill response equipment was being used to stage submarine cable.

During the site reconnaissance, the Building 70 area was found to be in good condition, including the yard area to the west of Building 70.

6.3 Facility Users

Appendix C lists the businesses that occupied the various buildings located within the SIUF boundaries. Appendix D summarizes the types of activities and operations that were performed by the various businesses.

6.4 Potential Areas of Concern

Appendix F is a summary of documented releases and spill events as identified in records of the NRC, DEQ spills and releases information, and Port records. It includes information on specific events that occurred between 1949 and 2005. Based on the release/spill history together with the historical information summarized in Section 6.2 and Appendices B through E, this section identifies potential areas of concern for OU2 and OU3 from 1996 to the present.

6.4.1 OU2

The following summarizes potential areas of concern identified for OU2 during this period:

- Small amounts of sandblast grit were observed to be present in several locations. The sandblast grit was removed by Cascade General.
- Petroleum product staining of soils was observed in several locations.
- Dry dock blocks covered with ship hull paints were staged in the central portion of the North Channel Avenue Fabrication Site. The blocks were removed by Cascade General.

6.4.2 OU3

No potential areas of concern were identified for OU3 during this period.

7. Summary of Potential Areas of Concern

7.1 Introduction

This section consolidates and summarizes the potential areas of concern identified in Sections 2.4, 3.4, 4.4, 5.4, and 6.4. Figure 43 shows the locations of potential areas of concern identified. **Except for the following, each of these areas had previously been identified and is being addressed by either the SIUF RI or the DEQ/Cascade General storm water Voluntary Cleanup Agreement.** Exceptions include:

- Two power substations with oil-filled equipment from the Kaiser shipyard period formerly located on OU1;
- Four power substations with oil-filled equipment from the Kaiser shipyard period formerly located on OU2; and
- One power substation with oil-filled equipment from the Kaiser shipyard period formerly located on OU3.

7.2 OU1

The following summarizes potential areas of concern identified for OU1.

7.2.1 Ballast Water Treatment Plant

The BWTP (including both the old and new plant) has been handling and treating oily waste waters since the early 1970s. There have been documented releases (see Section 4.4.1.6), placement of copper slag (see Section 4.2.3.1), and the potential for unknown releases. This area was identified as a potential area of concern and was investigated in the SIUF RI (see Sections 5.1.1.1 and 5.4.3.1.1 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.2.2 Building 73

Building 73 has always been used for surface preparation work. There have been observed releases, and given the nature of the activities conducted at this facility, there is the potential for unknown releases (see Sections 4.4.1.5 and 5.4.1.4). This area was identified as a potential area of concern and was investigated in the SIUF RI (see Sections 5.1.1.3 and 5.4.3.1.3 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.2.3 Building 4

Building 4 has a long history of ship construction and ship repair activities. There have been documented releases to the floor of the building and there is the potential for unknown releases (see Sections 3.4.1, 4.4.1.1, and 5.4.1.2). This area was identified as a potential area of concern and was investigated in the SIUF RI (see Sections 5.1.1.4 and 5.4.3.1.4 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.2.4 Building 43

Building 43 was constructed in 1942 and has a long history of ship construction and ship repair activities. There have been documented uses of a variety of chemicals and observed staining of soil (see Section 4.4.1.3) This area was identified as a potential area of concern and was investigated in the SIUF RI (see Sections 5.1.1.7 and 5.4.3.1.6 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.2.5 Electrical Substations/Transformers

what about substations @ end of each pier?

Electrical substations were present at the shipyard from 1942 to the present. There have been documented releases of PCBs to soil (see Section 4.2.1.1 and 5.4.1.6) and there is the potential for unknown releases. The eight electrical substations currently at the shipyard were identified as potential areas of concern and were investigated in the SIUF RI (see Sections 5.1.1.8 and 5.4.3.1.7 of the RI/FS Work Plan; Bridgewater Group, 2000c).

There were three power substations with oil-filled equipment from the Kaiser shipyard period located on OU1 (see Sections 3.2.2.5, 3.4.1, and 4.2.1.1). The substation located at the Way End Building 30-3 corresponds to the location of the cellular bulkhead constructed in 1951, which would have been completely excavated during that construction (see Figure 19). The two remaining substations (B and L on Figure 43) are potential areas of concern for PCBs.

Mike – can we assume non-oil filled substations etc?

7.2.6 Hazardous Waste Storage Areas (WSI, Building 10, Berth 305)

Wastes were stored in these areas without secondary containment and there have been observed staining and the potential that unknown releases occurred (see Sections 4.4.1.2, 4.4.1.7, 5.4.1.3, and 5.4.1.5). These areas were identified as potential areas of concern and were investigated in the SIUF RI (see Sections 5.1.1.11 and 5.4.3.1.9 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.2.7 Cascade General Yard Area

Historically the yard area has been used for a variety of activities related to ship building and repair. This area has been paved throughout much of the developed history of the island. Documented releases have occurred to the pavement (see Section 5.4.1.1), water quality criteria have been exceeded on multiple occasions in storm water (see Sections 5.2.3), and there is the potential for

unknown releases (see Section 3.4.1). Cascade General has entered into a Voluntary Cleanup Agreement with the DEQ to address storm water discharges from the yard area.

7.2.8 Building 60

An overturned drum on the east side of Building 60 was observed in a 1952 oblique photograph (Appendix F). This area was investigated by prior activities for other reasons (see Figure 13 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.3 OU2

The following summarizes potential areas of concern identified for OU2.

7.3.1 North Channel Avenue Fabrication Site

The North Channel Avenue Fabrication Site had documented soil staining and sand blast grit (see Section 4.4.2.1). This area (including Building 83) was identified as a potential area of concern and was investigated in the SIUF RI (see Sections 5.1.1.2 and 5.4.3.1.2 of the RI/FS Work Plan; Bridgewater Group, 2000c).

7.3.2 Electrical Substations

There were four power substations (A, P, Q, and R on Figure 43) from the Kaiser shipyard period located on OU2 (see Sections 3.2.2.5 and 3.4.2). None of these four locations were previously identified as potential areas of concern for PCBs. Sampling needed?

7.4 OU3

Electrical Substations. There was apparently one power substation (M on Figure 43) from the Kaiser shipyard period located on OU3 (see Sections 3.2.2.5 and 3.4.3). This location was not previously identified as a potential area of concern for PCBs.

7.5 Adjacent Properties

Areas of potential concern are identified for adjacent properties to the extent that these adjacent properties have the potential to be sources of chemicals that may be detected on the SIUF. This section presents information obtained incidental to the records review for the SIUF.

Ship building and ship repair activities and support activities occurred on properties that extend beyond the SIUF. Therefore, similar potential sources as identified above may have been present on

these adjacent properties and could be sources of chemicals with the potential to migrate onto the SIUF or to impact the same receptors (e.g., sediments). Sources identified include the following:

- Three apparent power substations with oil-filled equipment from the Kaiser shipyard period are located within less than 100 feet of the SIUF boundaries (G, T, and X on Figure 43).
- Three "fuel" USTs were located just off the SIUF south of Building 4 at the northwest corner of Building 2 (see Section 3.4.4.4).
- A gasoline UST was located just off the SIUF on the south side of Building 4 at Bay 9 (see Section 4.2.1.1).
- Debris was stored in a floating shed near Berths 305 and 306 (see Section 5.4.2).
- The dry docks have the potential to be sources (see Section 3.2.2.3, Section 4.4.4, and Appendix F).
- Vessels in dry dock or moored have the potential to be sources (see Section 3.4.4.2, Section 4.4.4, and Appendix F).

In addition, significant flooding occurred in 1948 (see Sections 3.4.4.1). Flooding of this magnitude had the potential to redistribute contaminants either on land or to the Willamette River.

8. PRP Summary

Potentially responsible parties (PRPs) are entities that may be responsible for the contamination to, at, or from a facility. Under state and federal law, liable PRPs include (i) those that cause or allow pollution to occur; (ii) facility owners and operators; (iii) former facility owners and operators at the time of a release; (iv) those arranging for disposal of hazardous substances; (v) those transporting hazardous substances for disposal; and (vi) those who contribute to or exacerbate contamination in some fashion.

The following is a summary of candidate PRPs who, based on preliminarily available information and type of activities conducted, may be connected to contamination to, at, or from the Swan Island Upland Facility, including sediment contamination adjacent to the facility.

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
1	A.F. Ehrlic	1950-1954	Printers	Upland
2	Acturus Shipping	1990-1995	Vessel lay up	Over-Water
3	American Petrofina	1990-1995	Vessel lay up	Over-Water
4	Alaska Tanker Company	1999	Release from vessel under repair	Over-Water
5	Albina Engine & Machine Works (predecessor to Dillingham)	1951-1971	Ship repair	Upland & Over-Water
6	Allstate Industrial/Marine Cleaning	1990-1993	Tank cleaning & disposal	Upland & Over-Water
7	American Classic Voyages	2000	Release from vessel under repair	Over-Water
8	American Fabricators (dba Harris Thermal Transfer Products)	1995	Industrial fabrication for the manufacture of heat exchangers and tanks; storage of materials, supplies & equipment	Upland
9	American Marine Service	1963	Ship repair	Upland & Over-Water
10	American Seafoods Inc.	1992	Release from vessel under repair	Over-Water
11	American Trading Trans.	1991	Release from vessel under repair	Over-Water
12	AMSCO Refrigeration Inc.	1987-1995	Refrigeration/heating business	Upland
13	ARCO	2000	Release from vessel under repair	Over-Water
14	ARCO Alaska, Inc.	1986-1990	Module fabrication	Upland
15	AUSTRAL LIGHTNING (vessel)	1993	Release from vessel under repair	Over-Water
16	Bailey Controls	1985	Manufacture of controls & instrument panels	Upland
17	Ballard Diving & Salvage Inc.	2003	Release from vessel under repair	Over-Water
18	Barton-Haynes	1947	Overhead crane manufacturer	Upland
19	Blasco, Inc.	1989-1992	Ship repair (painting/sandblasting)	Upland & Over-Water
20	Boston Metals Company	1984	Storage of heavy equipment	Upland
21	Bourne Air Lift Truck	1960-1963	Truck service and repair	Upland
22	Brown & Root	1984-1988	Module fabrication	Upland

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
23	Burlington Environmental	1989-1992	Industrial cleaning and environmental response	Upland & Over-Water
24	Butler Marion Co./Marion F. Butler	1947-1961	Steel products	Upland
25	C&C Sandblasting Company	1981-1983	Sandblasting	Upland & Over-Water
26	C.E. Mitchell Company	1948-1951	Manufacturing blackboards, paper products, flower pots & novelties; operated spray paint shop	Upland
27	C.H. Murphy Company	1958-1978	Ship chandlers	Upland
28	Cascade General	1986-2006	Ship repair	Upland & Over-Water
29	Cavi-Tech	1992-1996	Hydroblasting (for paint removal)	Upland & Over-Water
30	Chemical Processors, Inc. (ChemPro)	1989-1992	Industrial cleaning, environmental response and hazardous waste disposal services	Upland & Over-Water
31	Chevron	1986-2000	Releases from vessels under repair	Over-Water
32	Chevron Texaco Shipping	2003	Release from vessel under repair	Over-Water
33	City Metal Stamping Works	1955	Metal stamping	Upland
34	City Metal Manufacturing Co.	1956-1957	Metal stamping	Upland
35	CLN, Inc.	1987	Sandblasting contractor	Upland & Over-Water
36	Coast Engine & Equipment Corp.	1965-1968	Repair & storage of diesel equipment	Upland
37	Coastal Coatings	1984-1991	Ship repair (painting)	Upland & Over-Water
38	Columbia Factors	1969-1970	Steel fabrication for structural purposes and industrial equipment for assemblage	Upland
39	Columbia I & S, Inc.	1981-1986	Boiler repair	Upland
40	Columbia Wire & Iron	1998-Present	Steel fabrication	Upland
41	Consolidated Builders, Inc.	1947-1949	Ship dismantling	Upland & Over-Water
42	Corrosion Management, Inc.	1993-1995	Ship repair	Upland & Over-Water
43	Crosby & Overton	1979-1990	Industrial cleaning, environmental response, and hazardous waste disposal	Upland & Over-Water
44	Danker Pacific	2000	Release from vessel under repair	Over-Water
45	Diamond K	1990-2005	Ship repair (sandblasting for surface preparation & painting)	Upland & Over-Water
46	Diesel Training, Inc.	1949-1951	Carpenter shop	Upland
47	Dillingham Ship Repair	1975-1986	Ship repair	Upland & Over-Water
48	Dodd & Evans Co. (operating as Clark Industrial Truck Rentals)	1952-1953	Equipment repair	Upland
49	Doran Company	1975-1983	Propeller repair	Upland
50	Duane Peabody Company	1961-1963	Ship chandlers	Upland
51	E.J. Bartells Co.	1950-1993	Ship repair (boilers) and Insulation	Upland & Over-Water

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
			storage	
52	E.V. Prentice Dryer Co. (aka E.V. Prentice Co. & Prentice Machine Works)	1960-1970	Plywood manufacturer	Upland
53	Ehrlich's Business Service	1950-1951	Printers	Upland
54	Electric Controls Manufacturing Co.	1957-1959	Thermostat manufacturer; electric control switch manufacturer	Upland
55	Electric Controls, Inc.	1948-1957	Thermostat manufacturer; electric control switch manufacturer	Upland
56	Electro-Mechanical Co.	1955-1973	Marine repair & supplier	Upland & Over-Water
57	Ellerman Sawmill Manufacturing Co. (aka Charles Ellerman)	1950-1953	Sawmill manufacturing	Upland
58	Evergreen Chemical & Soap Company	1947-1950	Soap and perfume manufacturer	Upland
59	Exxon Shipping Co.	1988-1993	Releases from vessels under repair	Over-Water
60	Fentron Highway Products Co.	1970-1980	Fabrication of stanchions, sign posts and metal service stations	Upland
61	Fish Commission of Oregon	1951-1957	Shop space	Upland
62	Floating Marine Ways	1965-1974	Ship repair	Upland & Over-Water
63	FMC Corporation	1974-1986	Ship repair and outfitting tankers	Upland & Over-Water
64	Foss Environmental Services, Inc.	1992-2002	Industrial cleaning & environmental response and vessel moorage	Upland & Over-Water
65	Fought & Company, Inc.	1958-1961 1988-1990	Steel fabrication	Upland
66	Fought & Gray	1952	Steel fabrication	Upland
67	Fraser Boiler & Diesel	1988-1996	Ship repair (boilers)	Upland & Over-Water
68	Fraser Boiler Service	1961-1963	Ship repair (boilers)	Upland & Over-Water
69	Frazer Boiler & Diesel	1991-1995	Boiler repair	Upland
70	Fred Devine Diving & Salvage	1999-2000	Releases to lagoon	Over-Water
71	Freighters, Inc.	1971	Release from vessel under repair	Over-Water
72	General Construction Co.	1963	Ship repair	Over-Water
73	General Electric Company	1948-1954	Service department & warehouse	Upland
74	General Services Administration	1942-1952	Arranged and financed construction of shipyard; also leased property, and owned certain equipment, machinery, dry dock facilities, real property and raw materials	Upland & Over-Water
75	General Steamship Corp.	1994-2003	Releases from vessels under repair	Over-Water
76	Gillen-Cole Co.	1947-1949	Roofing and painting contractors	Upland
77	Gilmore Steel & Supply Co. Inc.	1947-1951	Steel supplier	Upland
78	Gilmore Steel Supply	1947-1950	Steel supplier	Upland
79	Global Incorporated (also known as Northwest Envirocon, Inc.)	1995	Insulation manufacturing	Upland

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
80	Graslee	1952	Electrical repair contractor	Upland
81	GREEN HARBOUR (vessel)	1996	Release from vessel under repair	Over-Water
82	Gunderson Brothers Engineering	1961-1969	Ship repair	Upland
83	Gunderson, Inc.	1985-1988	Marine contractor (outfitting tankers)	Upland & Over-Water
84	Guy F. Atkinson	1952	Application of bitumistic solution to steel	Upland
85	Harris Thermal Transfer Products	1995	Design and manufacture of heat exchangers, pressure vessels and custom industrial process equipment	Upland
86	Hempel's Marine Paint	1985	Storage of marine paints	Upland
87	Hickey Marine	1996	Release from vessel under repair	Over-Water
88	Industrial Marine Inc. (may also be known as Industrial Marine Cleaners)	1998-1999	Industrial cleaning & environmental response	Upland & Over-Water
89	Industrial Products, Inc.	1947-1951	Manufacture of portable sawmill equipment and dry kilns	Upland
90	Industrial Refrigeration & Equipment Co.	1950-1958	Refrigeration manufacturer	Upland
91	Industrial Truck & Equipment Co.	1953-1956	Equipment repair	Upland
92	In-Mar Sales, Inc.	1991-1995	Paint supplier	Upland
93	International Marine & Industrial Applicators	1991	Paint supplier	Upland
94	Ireland Industries, Inc.	1947-1950	Sandblasting and spray painting industrial equipment	Upland & Over-Water
95	J.D. Sampson Contracting Company	1950-1963	Boiler storage	Upland
96	J.T. Thorpe & Son, Inc.	1955-1961	Boiler insulation	Upland
97	J.T. Thorpe Northwest Inc.	1957-1963	Boiler insulation	Upland
98	James L. Linn (aka J.L. Linn)	1948-1950	Saw teeth manufacturer	Upland
99	Johnston Propeller Works	1949-1958	Ship repair and equipment maintenance	Upland & Over-Water
100	Joseph M. Fought	1953-1958	Steel fabrication	Upland
101	Kaiser Company, Inc.	1942-1947	Shipbuilding	Upland & Over-Water
102	Keystone Shipping Co.	1968-1975 1992-1995	Marine shipping and releases from vessels under repair	Over-Water
103	Kimco	1987-1989	Ship repair (painting & sandblasting)	Upland & Over-Water
104	Kleen Blast	1995	Sandblasting equipment storage	Upland & Over-Water
105	Knappton Towboat	1980	Ship repair	Over-Water
106	L & S Marine	1987-1990	Ship repair	Upland & Over-Water
107	L.D. Sturm (Sturm Elevator Company)	1949-1951	Vessel moorage	Over-Water
108	L.W. Case	1948-1951	Aluminum oil tank manufacturing	Upland

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
109	Lampson Universal Rigging	1987-1990	Equipment storage, maintenance and operations	Upland
110	Lift Truck Sales & Service Co.	1959-1964	Lift truck sales & repair	Upland
111	Linden Farms	1998	Release to lagoon	Over-Water
112	Lips Propellers	1987-2005	Propeller repair and storage	Upland & Over-Water
113	Lockheed Shipbuilding Corporation	1985-1988	Ship repair	Upland & Over-Water
114	Lockport Marine (subsidiary of Lockheed Shipbuilding Company)	1986-1988	Ship repair	Upland & Over-Water
115	Lockwood Industries, Inc.	1989-1993	Transfer of marine-generated oily waste water or slops to the BWTP	Upland & Over-Water
116	M.D. Hicklin	1948-1951	Manufacturer of heavy equipment; concrete building manufacturer	Upland
117	M/V COLUMBIA (vessel)	2005	Release from vessel under repair	Over-Water
118	M/V CSO CONSTRUCT (vessel)	1998	Release from vessel under repair	Over-Water
119	M/V TALL BUCK (vessel)	2000	Release from vessel under repair	Over-Water
120	Mac's Steam Cleaning	1963	Vacuum cleaning of vessel tanks	Upland & Over-Water
121	Mackey Miller and Eastman	1952	Storage and overhauling of electrical equipment	Upland
122	Mar Com	1993-1995	Ship repair, industrial fabrication and machining, and user of BWTP	Upland & Over-Water
123	Mar-Dustrial Sales & Service	1947-1961	Ship chandlers	Upland
124	Mar-Dustrial Sales, Inc.	1961-1974	Ship services – operated a paint shop; spray paint	Upland
125	Marine Electric Company	1951-1963	Ship repair	Upland & Over-Water
126	Marine Propulsion Services, Inc.	1982-1998	Surface preparation of turbine engines, fans and other equipment; turbine repair and manufacturing	Upland & Over-Water
127	Marine Vacuum Service, Inc.	1993-1995	Tank, bilge and boiler cleaning	Upland & Over-Water
128	Marine Ways Corp.	1979-1986	Ship repair	Upland & Over-Water
129	Matthews Marine Hydraulic	1967-1974	Marine manufacturing & design (marine winches, hydraulic power units and steering & engine controls)	Upland
130	McCoy Industries	1952-	Machine works	Upland
131	Misco Services, Inc.	1957-1959	Industrial supplies & manufacturer of machinery, tools & floating structures	Upland
132	Murphy Pacific Corporation	1970-1973	Assembling parts of Fremont Bridge	Upland & Over-Water
133	Murphy Pacific Enterprises	1970	Assembling parts of Fremont Bridge	Upland & Over-Water
134	National Appliance Co.	1947-1951	Laboratory apparatus and hospital equipment manufacturer	Upland
135	Neil F. Lampson Co.	1986	Repair of a Brown & Root USA vessel	Upland & Over-Water

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
136	Nordic Well Servicing	1984	Construction of oil well drilling equipment	Upland
137	North American Trading Company	1983-1989	Ship repair	Upland & Over-Water
138	Northwest Copper Works	1974-1982	Steel fabrication	Upland
139	Northwest Envirocon, Inc. (aka Global, Inc.)	1995-2005	Insulation manufacturing	Upland
140	Northwest Field Services	1986-1994	Transfer of marine-generated oily waste water or slops to the BWTP	Upland & Over-Water
141	Northwest Marine Iron Works	1951-1993	Ship repair & industrial fabrication	Upland & Over-Water
142	Northwest Ordnance Company	1961-1963	Marine electronics (operated a shop)	Upland
143	Northwest Vacuum Truck Services	1983-1986	Industrial cleaning and storage; tank cleaning and sludge removal	Upland & Over-Water
144	Norvac Services, Inc.	1986-1989	Industrial cleaning and storage; tank cleaning and sludge removal	Upland & Over-Water
145	Olympian Stone Company, Inc.	1964-1965	Casting plant for exposed aggregate concrete	Upland
146	Oregon Iron Works, Inc.	1993-1995	Industrial fabrication for the manufacture of trash racks and cladding panels for use at Shasta Dam	Upland
147	Oregon Steel Mills	1995	Storage and assembly of parts for steel rolling mill expansion	Upland
148	Otto Castrow Company	1947	Manufacture of insulation supplies	Upland
149	Pacific Abrasives	1966	Ship repair	Upland & Over-Water
150	Pacific Coast Environmental, Inc.	1988-1993	Marine & industrial cleaning	Upland & Over-Water
151	Pacific Detroit Diesel	1997	Release from outfall	Over-Water
152	Pacific Diesel Power Company	1960-1974	Detroit diesel distributor	Upland
153	Pacific Dynamics	1994-2005	Tank, bilge and boiler cleaning	Upland & Over-Water
154	Pacific Marine Service (aka Pacific Marine Services, Pacific Marine Service Company and Pacific Marine Company)	1950-1972	Ship repair (sandblasting activities and chemical cleaning of tanks & boilers)	Upland & Over-Water
155	Pacific Marine Ship Repair	1983-1989	Ship repair	Upland & Over-Water
156	Pacific Ordnance & Electronics Co.	1961-1965	Ship repair – ordnance and electronics	Upland & Over-Water
157	Pacific Riggers	1955-1957	Ship repair	Upland & Over-Water
158	Pac-Mar Services (aka Pacific Marine Service(s) before 1972)	1972-1974	Ship repair	Upland & Over-Water
159	Pacord	1985-1986	Ship repair	Upland & Over-Water
160	Paramount Advertising and Printing Co.	1947-1950	Printers	Upland
161	Paramount Printing Company	1947-1950	Printers	Upland

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
162	Perfect Products Co.	1947-1951	Manufacturing blackboards, paper products, flower pots & novelties; operated spray paint shop	Upland
163	Performance Contracting, Inc. (Marine Div)	1980-1987	Marine installation	Upland
164	Peter Kiewit Construction	1977-1979	Construction of dolphins and access dock structures for barge loading/unloading associated with construction of Fremont Bridge	Upland & Over-Water
165	Petrotek	1986-1990	Tank cleaning, blasting & coating	Upland & Over-Water
166	Pettibone Mercury Corporation	1961-1963	Manufacture of fork lifts	Upland
167	PHILADELPHIA (vessel)	1992	Release from vessel under repair	Over-Water
168	Pointer-Willamette Trailer Co., Inc.	1972-1973	Shipbuilding	Upland
	Polar Tankers	2000	Release from vessel under repair	Over-Water
169	Port of Astoria	1991	Transfer of marine-generated oily waste water or slops to the BWTP	Upland & Over-Water
170	Portland General Electric	1949	Owner of electrical facilities and equipment	Upland
171	Portland Shipbuilding Co.	1963-1965	Ship repair	Over-Water
172	Portland Wire & Iron	1971	Fabrication of wire products	Upland
173	Premier Gear & Machine Works	1955-1963	Gear cutting and general machine work	Upland
174	Progress Electronics Company of Oregon	1961-1985	Marine electronics manufacturing	Upland
175	PSER, Inc.	1980-1986	Refrigeration contractors	Upland
176	R.E.H. Inc.	1991-1993	Equipment maintenance shop for repair of forklifts	Upland
177	Reconstruction Finance Corporation	1942-1952	Arranged and financed construction of shipyard; also leased property, and owned certain equipment, machinery, dry dock facilities, real property and raw materials	Upland & Over-Water
178	Riedel International, Inc.	1985-1993	Ship repair and environmental response – hazardous waste storage, vehicle cleaning,	Upland & Over-Water
179	S & P Enterprises, Inc.	1964	Manufacture of electric small boat lifts	Upland
180	Schnitzer	1979-1981	Ship repair	Over-Water
181	Sea-Land Transport Co.	1963-1965 1990	Release from SEA-LAND NAVIGATOR (vessel) under repair	Over-Water
182	Seariver Maritime	1994	Release from vessel under repair	Over-Water
183	Shaver Transportation Co.	1991	Vessel owner and transfer of	Upland & Over-Water

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
			marine-generated oily waste water or slops to the BWTP	
184	SIPCO	1988-1989	Vessel spray painting	Upland & Over-Water
185	Soule Steel Company	1952	Steeline products	Upland
186	Southwest Marine	1989-1997	Ship repair	Upland & Over-Water
187	Spencer Environmental	1993	Transfer of marine-generated oily waste water or slops to the BWTP	Upland & Over-Water
188	State of Oregon, Fish Commission	1957	Shop space	Upland
189	Steelhead Construction	1984-Present	Floating home builder	Upland
190	Sun Refining and Marketing Company	1987	Ship repair (work on SS PRINCE WILLIAM SOUND)	Upland & Over-Water
191	Thermal Services, Inc.	1994-1999	Thermal mechanical insulation	Upland & Over-Water
192	Thompson Metal Fabricators	1958-1977	Metal fabrication	Upland
193	Tidewater Barge Lines	1981-1984 1991	Ship repair; transfer of marine-generated oily waste water or slops to the BWTP	Upland & Over-Water
194	Transiter Truck Co.	1955-1960	Industrial manufacturer	Upland
	Transmarine Navigation Corp.	2001	Release from vessel under repair	Over-Water
	Transoceanic Shipping Co.	2002	Release from vessel under repair	Over-Water
195	Tyco Submarine Systems Ltd.	1997-Present	Storage and repair of transoceanic cable equipment	Upland & Over-Water
196	U.S. Army Corps of Engineers	1989-2000	Releases from dredge under repair	Over-Water
197	U.S. Coast Guard	1962-present	Vessel inspection and moorage	Upland & Over-Water
198	U.S. Maritime Commission	1942-1952	Arranged and financed construction of shipyard; also leased property, and owned certain equipment, machinery, dry dock facilities, real property and raw materials	Upland & Over-Water
199	U.S. Navy	1949-1950 1961-1985	Releases from vessels under repair	Over-Water
200	VENETIA (vessel)	2003	Release from vessel under repair	Over-Water
201	W & O Supply Co.	1982-1995	Marine valves & fitting supplier; construction & conversion	Upland
202	Walashek Industries	1990-present	Machine work, welding, fitting of boiler machinery parts, boiler repair, industrial cleaning	Upland & Over-Water
203	War Assets Administration	1942-1952	Arranged and financed construction of shipyard; also leased property, and owned certain equipment, machinery, dry dock facilities, real property and raw materials	Upland & Over-Water
204	Wellons, Inc.	1995	Metal fabrication of heat exchangers	Upland

	PRP	Years	Activities	Areas of Operation (Upland or Over-Water)
205	West Coast Marine Cleaning	1990-1999	Industrial cleaning and environmental response; transfer of marine-generated oily waste water or slops to the BWTP	Upland & Over-Water
206	West Coast Wire & Cable Co.	1955-1957	Ship repair	Upland & Over-Water
207	West State, Inc.	1986-1995	Ship repair and industrial fabrication	Upland & Over-Water
208	Western Boiler and Mechanical, Inc. (subsidiary of H.C. Inc. - holding company for WSI)	1992-1994	Boiler fabrication and repair	Upland
209	Westinghouse Electric Corp.	1949-1950	Warehouse for storage of electrical equipment	Upland
210	Willamette Iron & Steel Company	1951-1980	Ship repair contractor	Upland & Over-Water
211	Woodbury & Company	1950-1974	Manufacture and fabrication of industrial tools and supplies, steel, and heavy hardware	Upland
212	Woodbury Steel	1966	Manufacture and fabrication of industrial tools and supplies, steel, and heavy hardware	Upland
213	Woodlawn Sprinkler Co.	1955-1961	Lawn sprinkler manufacturer	Upland
214	Wright & Johnson	1947-1963	Crane storage	Upland
215	Wright Schuchart Harbor Company	1990	Module fabrication	Upland
216	WS, Inc.	1987-1992	Ship repair	Upland & Over-Water
217	Zarcon Corporation	1986-1987	Industrial painting contractor also providing building exterior sandblasting services	Upland
218	Zidell	1961-1973 1978-1982	Ship repair and vessel mooring prior to scrapping	Upland & Over-Water

9. Orphan PRP Summary

EPA has determined that there is a substantial "orphan share" of liability in the Portland Harbor Superfund Site. EPA's definition of "orphan share" is that share of responsibility for response costs specifically attributable to identified PRPs determined by EPA to be: (1) potentially liable; (2) insolvent or defunct; and (3) unaffiliated with any other viable PRP potentially liable for response costs at the site. Based on preliminarily available information, including the Oregon Business Registry and some records of the Oregon Department of State, the following is a summary of PRPs connected to the Swan Island Upland Facility and listed in Section 8 who appear to be unaffiliated, insolvent, or defunct entities.

1 A.F. Ehrlic
2 Albina Engine & Machine Works
3 Allstate Industrial/Marine Cleaning
4 American Classic Voyages
5 American Petrofina
6 AMSCO Refrigeration Inc.
7 Barton-Haynes
8 Blasco, Inc.
9 Boston Metals Company
10 Bourne Air Lift Truck
11 Butler Marion Co./Marion F. Butler
12 C&C Sandblasting Company
13 C.E. Mitchell Company
14 Cavi-Tech
15 City Metal Manufacturing Co.
16 City Metal Stamping Works
17 CLN, Inc.
18 Coastal Coatings
19 Columbia Factors
20 Columbia I & S, Inc.
21 Consolidated Builders, Inc.
22 Corrosion Management, Inc.
23 Danker Pacific
24 Diamond K
25 Diesel Training, Inc.
26 Dillingham Ship Repair
27 Dodd & Evans Co. (operating as Clark Industrial Truck Rentals)
28 Duane Peabody Company
29 E.V. Prentice Dryer Co. (aka E.V. Prentice Co. & Prentice Machine Works)
30 Ehrlich's Business Service
31 Electric Controls Manufacturing Co.
32 Electric Controls, Inc.
33 Electro-Mechanical Co.
34 Ellerman Sawmill Manufacturing Co. (aka Charles Ellerman)
35 Evergreen Chemical & Soap Company
36 Fentron Highway Products Co.
37 Floating Marine Ways
38 Fraser Boiler & Diesel
39 Fraser Boiler Service
40 Frazer Boiler & Diesel
41 Freighters, Inc.
42 Gillen-Cole Co.
43 Global Incorporated (also known as Northwest Envirocon, Inc.)
44 Graslee
45 Industrial Marine Inc. (may also be known as Industrial Marine Cleaners)
46 Industrial Products, Inc.
47 Industrial Refrigeration & Equipment Co.
48 Industrial Truck & Equipment Co.
49 International Marine & Industrial Applicators
50 Ireland Industries, Inc.
51 J.D. Sampson Contracting Company
52 James L. Linn (aka J.L. Linn)
53 Johnston Propeller Works
54 Kaiser Company, Inc.
55 Kimco
56 L & S Marine
57 L.W. Case
58 Lampson Universal Rigging
59 Lift Truck Sales & Service Co.
60 Lockwood Industries, Inc.
61 M.D. Hicklin
62 Mac's Steam Cleaning
63 Mackey Miller and Eastman
64 Marine Electric Company
65 Marine Ways Corp.
66 McCoy Industries
67 Misco Services, Inc.
68 National Appliance Co.
69 North American Trading Company
70 Northwest Envirocon, Inc. (aka Global, Inc.)
71 Northwest Field Services
72 Northwest Ordnance Company
73 Northwest Vacuum Truck Services

74 Norvac Services, Inc.
75 Olympian Stone Company, Inc.
76 Otto Castrow Company
77 Pacific Abrasives
78 Pacific Coast Environmental, Inc.
79 Pacific Marine Service (aka Pacific Marine Services, Pacific Marine Service Company and Pacific Marine Company)
80 Pacific Marine Ship Repair
81 Pacific Ordnance & Electronics Co.
82 Pacific Riggers
83 Pac-Mar Services (aka Pacific Marine Service(s) before 1972)
84 Paramount Advertising and Printing Co.
85 Paramount Printing Company
86 Perfect Products Co.
87 Petrotek
88 Pettibone Mercury Corporation
89 Pointer-Willamette Trailer Co., Inc.
90 Portland Shipbuilding Co.
91 Portland Wire & Iron
92 Progress Electronics Company of Oregon
93 R.E.H. Inc.
94 Riedel International, Inc.
95 S & P Enterprises, Inc.
96 Soule Steel Company
97 Thermal Services, Inc.
98 Transiter Truck Co.
99 West Coast Wire & Cable Co.
100 West State, Inc.
101 Western Boiler and Mechanical, Inc. (subsidiary of H.C. Inc. - holding company for WSI)
102 Willamette Iron & Steel Company
103 Woodlawn Sprinkler Co.
104 Wright & Johnson
105 WS, Inc.
106 Zarcon Corporation

10. References

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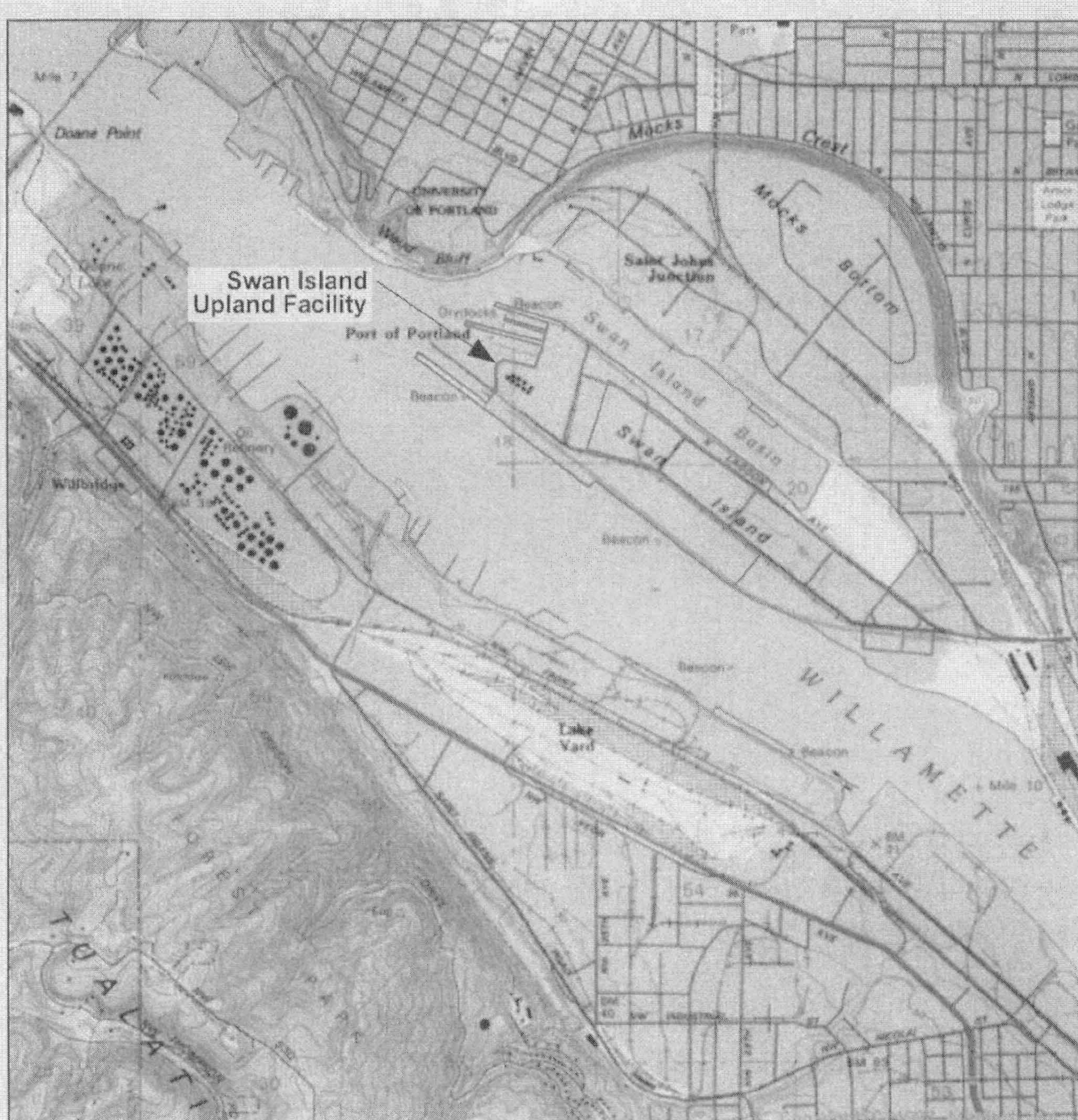
Figures



Base map prepared from USGS 7.5-minute quadrangles as provided by Topozone. (1990)

0 2000 4000

Scale in Feet

N

Site Location Map

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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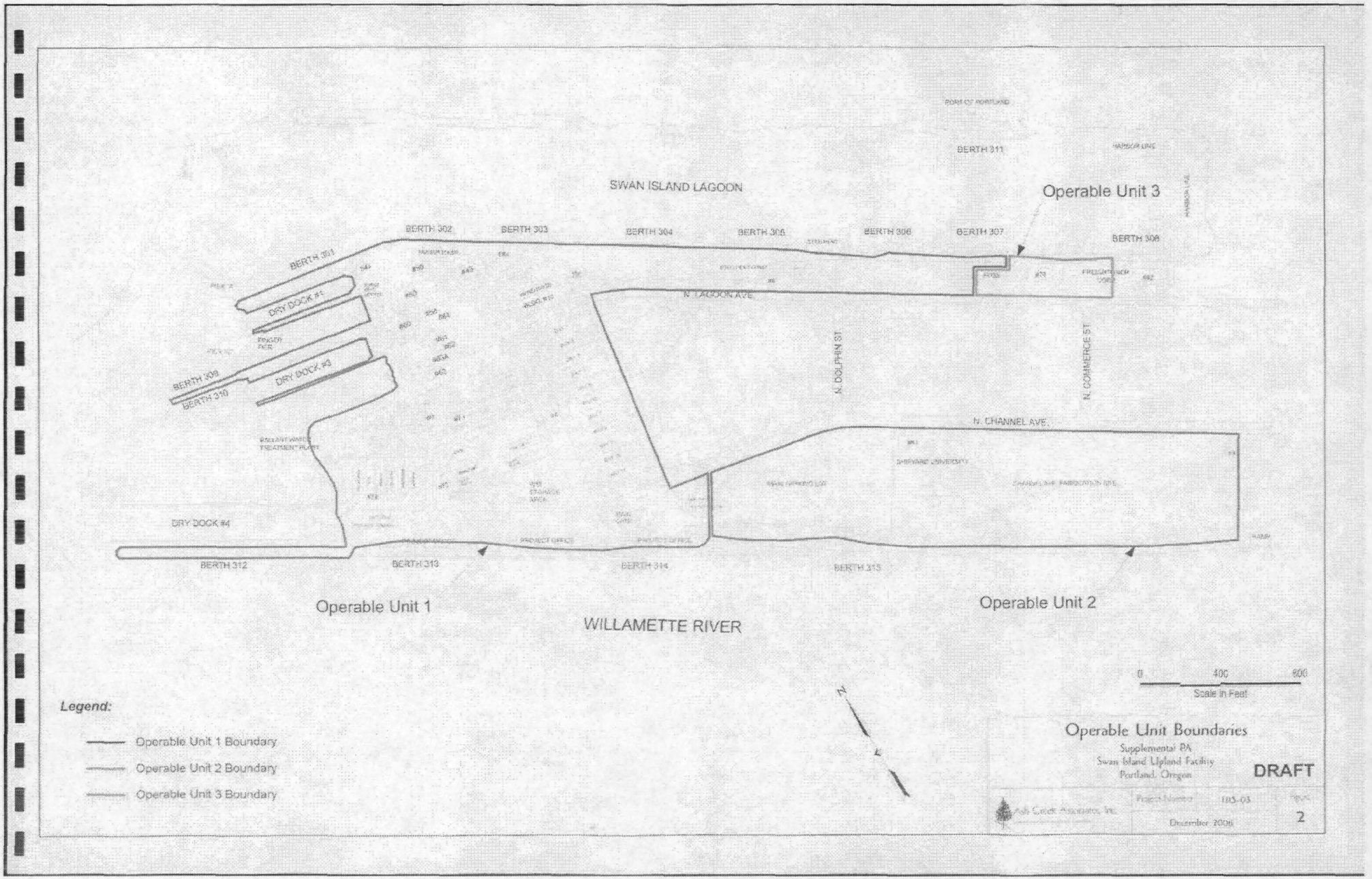
Ash Creek Associates, Inc	Project Number	1115-03	Figure
	December 2006		1


SWAN ISLAND LAGOON
Operable Unit 3
BERTH 311
BERTH 302
BERTH 303
BERTH 304
BERTH 305
BERTH 306
BERTH 307
BERTH 308
BERTH 309
BERTH 310
DRY DOCK #1
DRY DOCK #3
DRY DOCK #4
N. LAGOON AVE.
N. DOLPHIN ST
N. COMMERCE ST
N. CHANNEL AVE.
BERTH 312
BERTH 313
BERTH 314
BERTH 315
Operable Unit 1
WILLAMETTE RIVER
Operable Unit 2
0
400
800
Scale in Feet
Legend:
Operable Unit 1 Boundary
Operable Unit 2 Boundary
Operable Unit 3 Boundary
Operable Unit Boundaries
Supplemental PA
Swan Island Upland Facility
Portland, Oregon
DRAFT
December 2008
2

DEQ012823

1920

Port purchases Swan Island from Swan Island Real Estate Company (1922)
Port begins West Swan Island Project (1923)
Port begins development of original Portland airport and causeway from island to mainland (1926)

1930

Original Portland airport starts operation (1931)

1940

Original Portland airport ceases operation (1941)
U.S. Maritime Commission contracts with Kaiser Company, Inc. to build and operate shipyard facilities (1942)
Port leases Swan Island to U.S. Maritime Commission (1942)
Shipyard construction begins (1942)
Kaiser issued permit to construct temporary pontoon and trestle viaduct (1942)
Kaiser issued permit to dredge for 14,000-ton dry dock (1942)
First ship launched by Kaiser (1942)
Building 80 constructed (1944)
Last ship launched by Kaiser (1945)
Navy Dry Dock installed (1945)
Port extends lease to U.S. Maritime Commission for 7 years (1945)
War Assets Administration declares Swan Island as surplus and advertises the property assets for sale (1947)
Letter of intent provides for sale of all assets to the Port (1949)
General Services Administration transfers property to the Port (1949)

1950

Port begins operation of the Swan Island Ship Repair Yard (1950)
Dry Dock 2 installed; shipway removal and abandonment started (1950)
Building 50 and 54 constructed (1951)
Building 60 and 61 constructed (1952)
Building 58 constructed (1957)

1960

Port reverses its leasehold-only policy and allows new tenants to purchase (1962)
Remaining shipways abandoned and Dry Dock 3 installed (1962)
Building 9 constructed (1965)
Building 63 carpenter shop constructed (1967)
Berths 306, 307 and 308 constructed (1967)

1970

Building 63 machine shop constructed (1970)
Air barrier installed around dry docks (1972)
Original ballast water treatment plant built (1973)
Employee parking lot constructed (1977)
Major site development and modifications, including construction of Dry Dock 4, Berths 312 through 315, Building 7
Building 6 near Berth 305 constructed (late 1970s)
Central Utility Building, and new ballast water treatment plant (1979)
Building 71 constructed (1979)

1980

Building 70 constructed (1980)
Building 73 constructed (1980/1981)
Building 72 constructed (1981)
Building 61 constructed (1982)
Building 81 constructed (1986)
ARCO module construction in North Channel Fabrication Area (1986 to 1990)

1990

Dry Dock 2 decommissioned and sold (1990)
Building 62 constructed (~1993)
Dry dock stormwater treatment plant constructed (1997)
Cascade General takes over shipyard operations (1996)

2000

Cascade General purchased shipyard (2000)
Dry Dock 4 sold (2001)
Dry Dock 2 returned for deconstruction (2005)

Historical Timeline

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1115-03	Figure
December 2006		3

Source: Ackroyd Photography
Photo 14736-1

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Swan Island in the Early 1920s

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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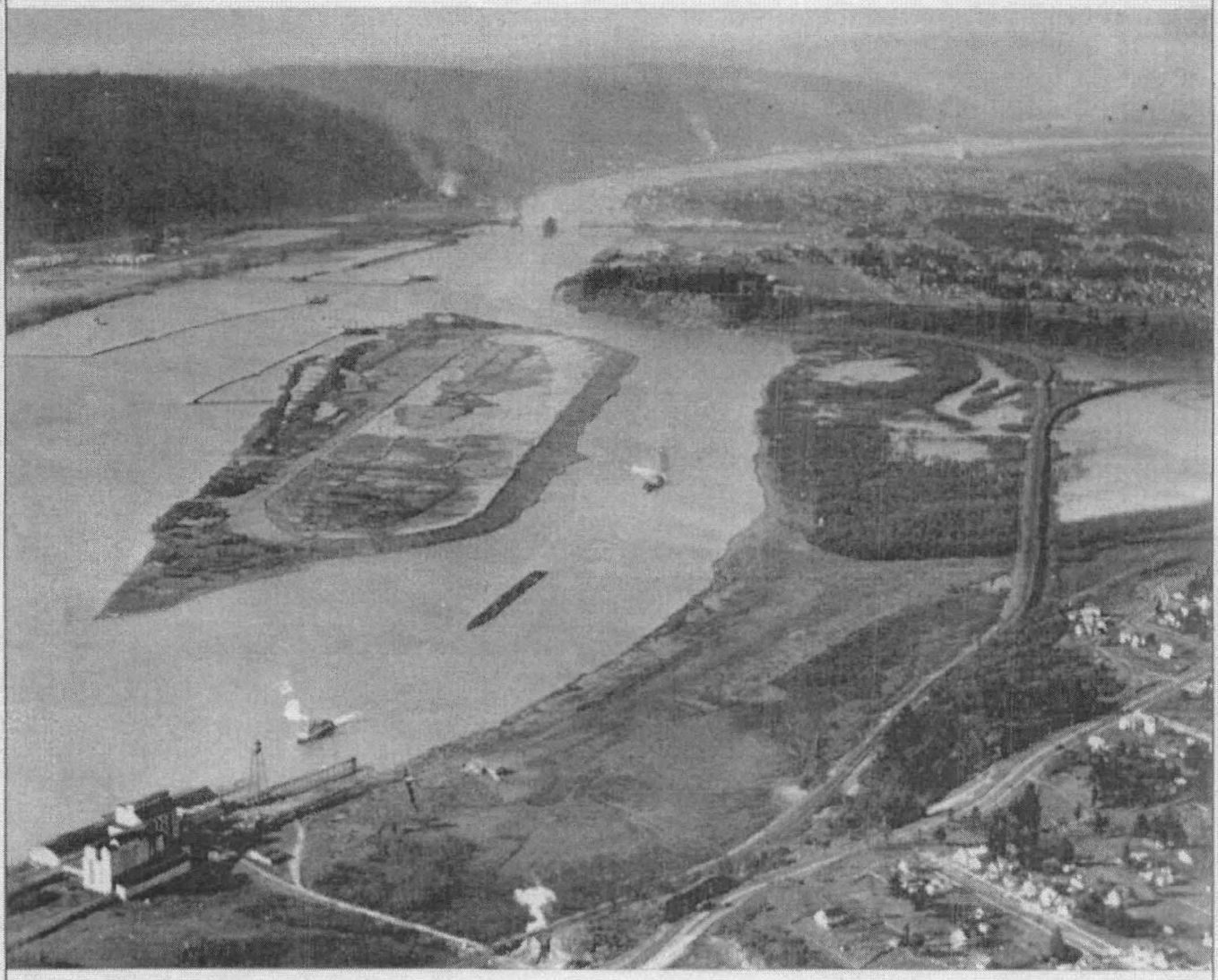
Project Number	1115-03	Figure
December 2006		4



Source: Ackroyd Photography
Photo 17838-1

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Swan Island During West Swan Island Project

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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Ash Creek Associates, Inc.	Project Number 1115-03	Figure 5
	December 2006	

Source: Ackroyd Photography
Photo 17001-1

N

0 1000 2000

Approximate Scale in Feet

Original Portland Airport

SIUF Supplemental PA
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Portland, Oregon

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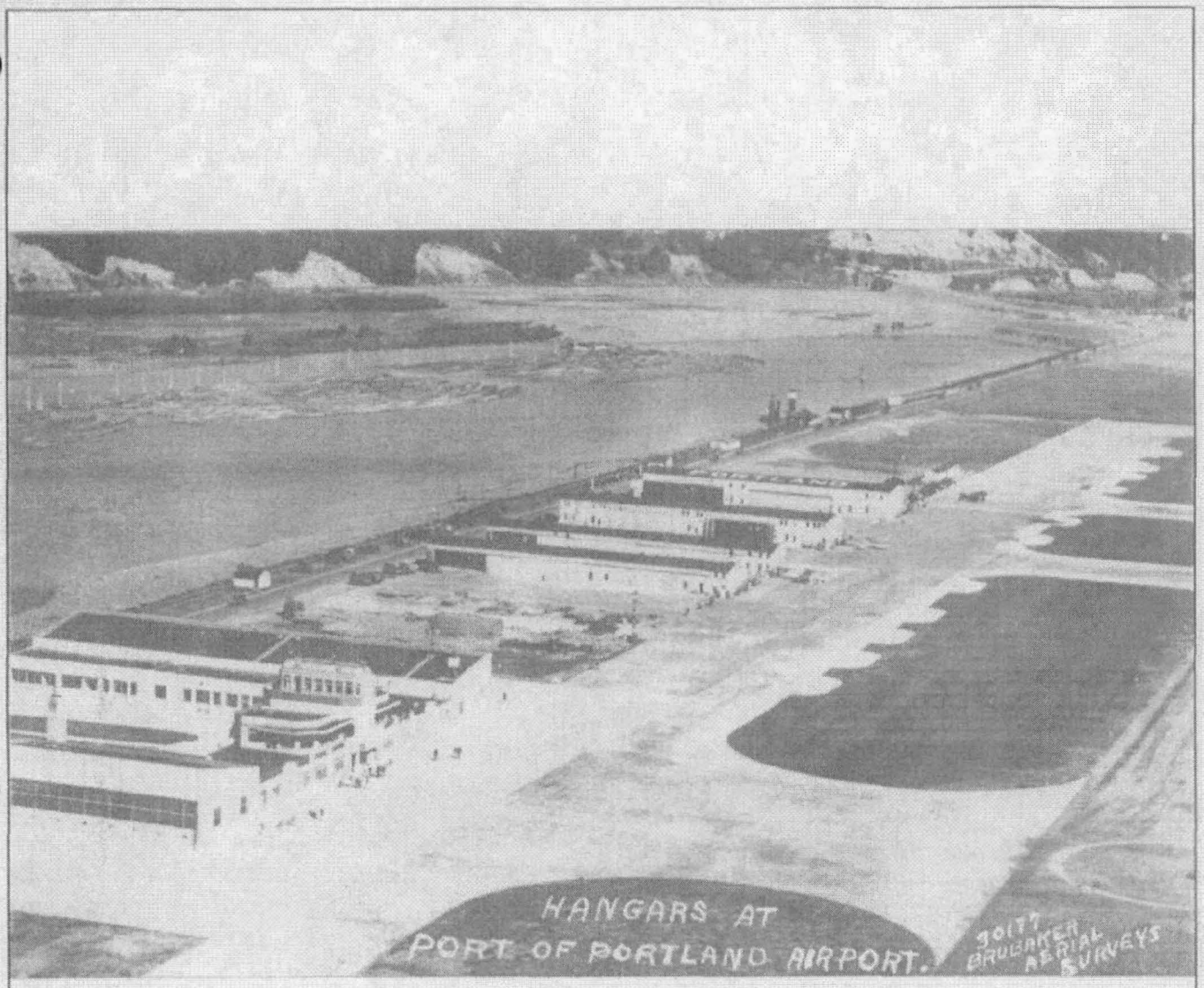
Ash Creek Associates, Inc

Project Number	1115-03	Figure
December 2006		6



Source: Brubaker Aerial Surveys
Photo 30177

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Original Portland Airport - 1929

SIUF Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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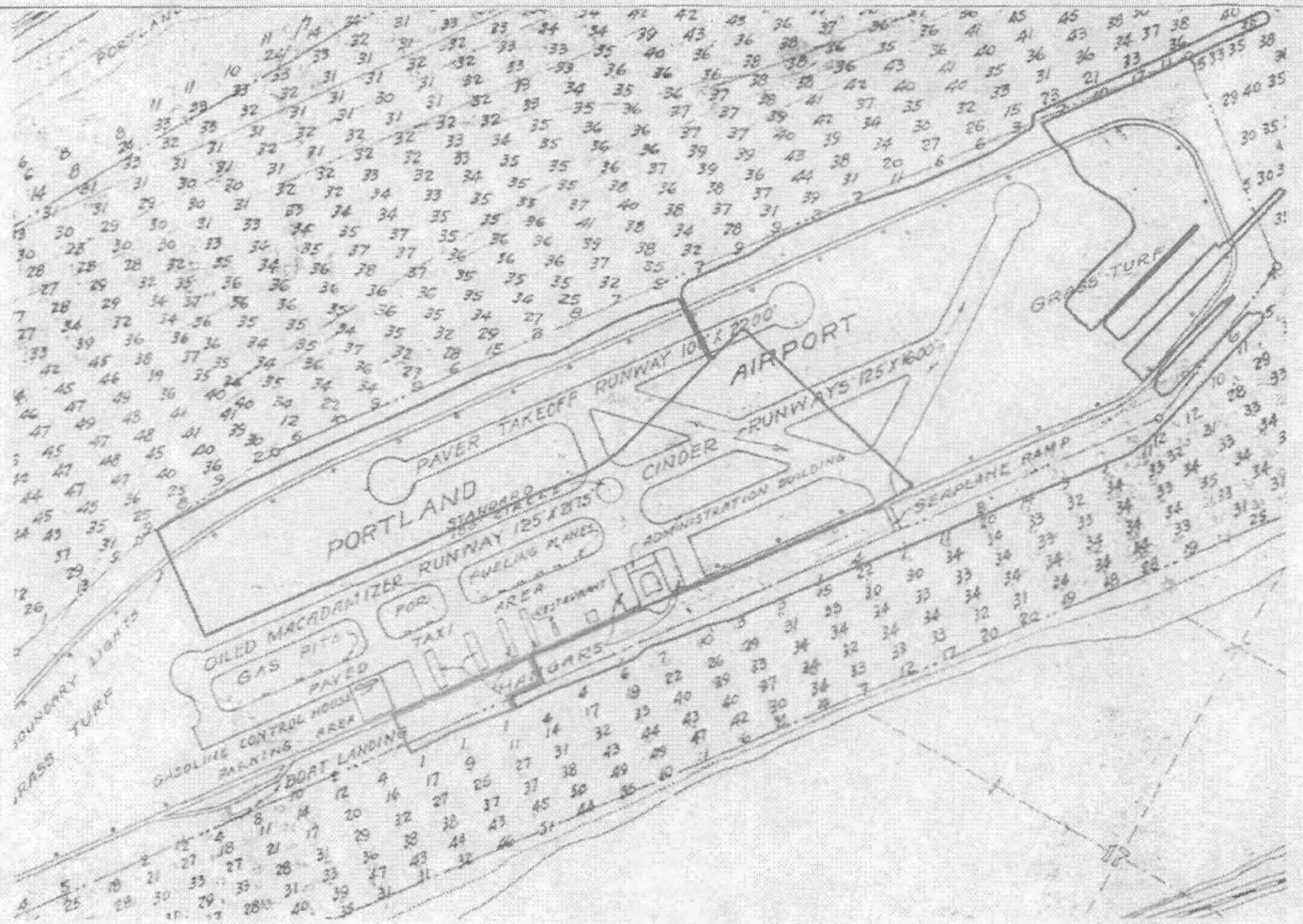
Project Number	1115-03	Figure
December 2006		7



Legend:

- Operable Unit 1 Boundary
- Operable Unit 2 Boundary
- Operable Unit 3 Boundary

Source:
The Port of Portland
Portland Harbor Willamette River from South City Boundary to West Oregon Lumber Co's Mill, 1932

Original Portland Airport Layout

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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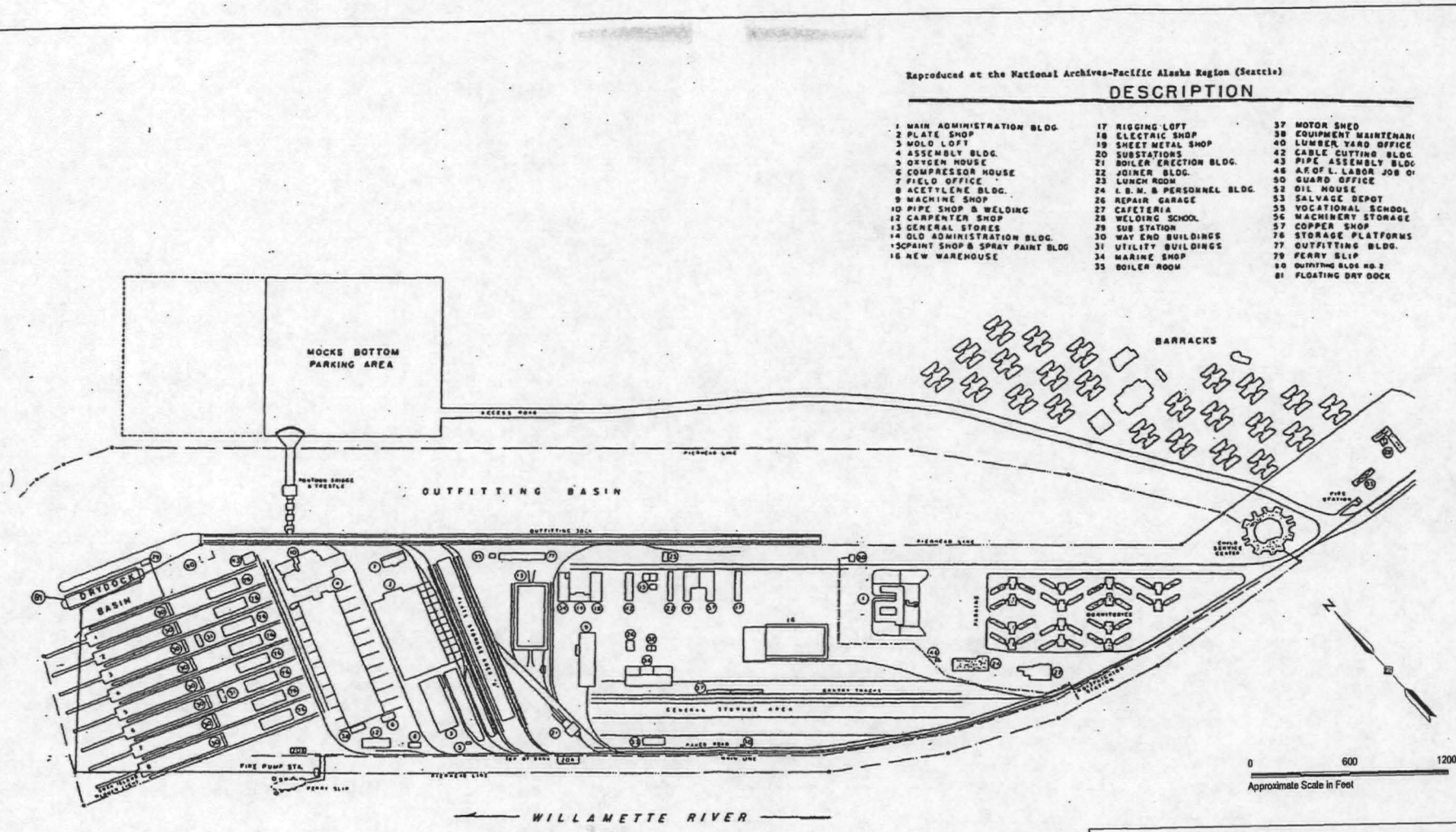
Project Number: 1815-03
December 2008

Figure: 8

DEQ012829



Kaiser Shipyard Layout - 1945

Supplemental PA

Swan Island Upland Facility

Portland, Oregon

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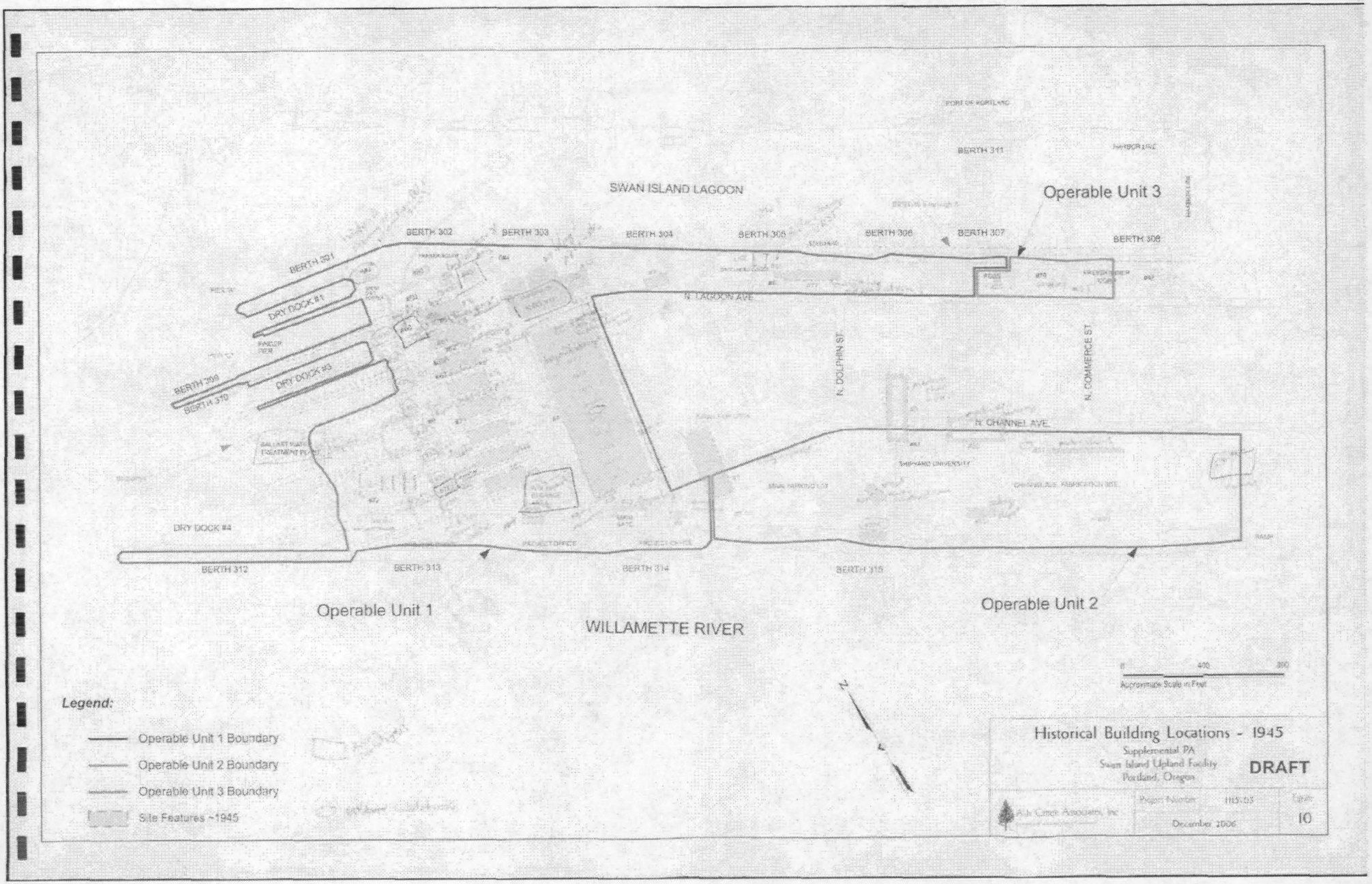
Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1115-03	Figure
December 2006		9


SWAN ISLAND LAGOON
Operable Unit 3
BERTH 311
BERTH 302
BERTH 303
BERTH 304
BERTH 305
BERTH 306
BERTH 307
BERTH 308
BERTH 309
BERTH 310
DRY DOCK #1
DRY DOCK #3
DRY DOCK #4
N. LAGOON AVE
N. DOLPHIN ST
N. COMMERCE ST
N. CHANNEL AVE
SHIPYARD UNIVERSITY
BERTH 312
BERTH 313
BERTH 314
BERTH 315
Operable Unit 1
WILLAMETTE RIVER
Operable Unit 2
Legend:
Operable Unit 1 Boundary
Operable Unit 2 Boundary
Operable Unit 3 Boundary
Site Features ~1945
Historical Building Locations - 1945
Supplemental PA
Swan Island Upland Facility
Portland, Oregon
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December 2006
10

DEQ012831

Source: Ackroyd Photography
Photo 23344-7

0 1000 2000

Approximate Scale in Feet

Kaiser Shipyard - 1943

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		11

Source: Ackroyd Photography
Photo 23344-8

N

Kaiser Shipyard (Looking SW) - 1943

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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Ash Creek Associates, Inc.	Project Number: 1115-03	Figure: 12
	December 2006	

Source: Ackroyd Photography
Photo 23344-4

N

Kaiser Shipyard (Looking NW) - 1943

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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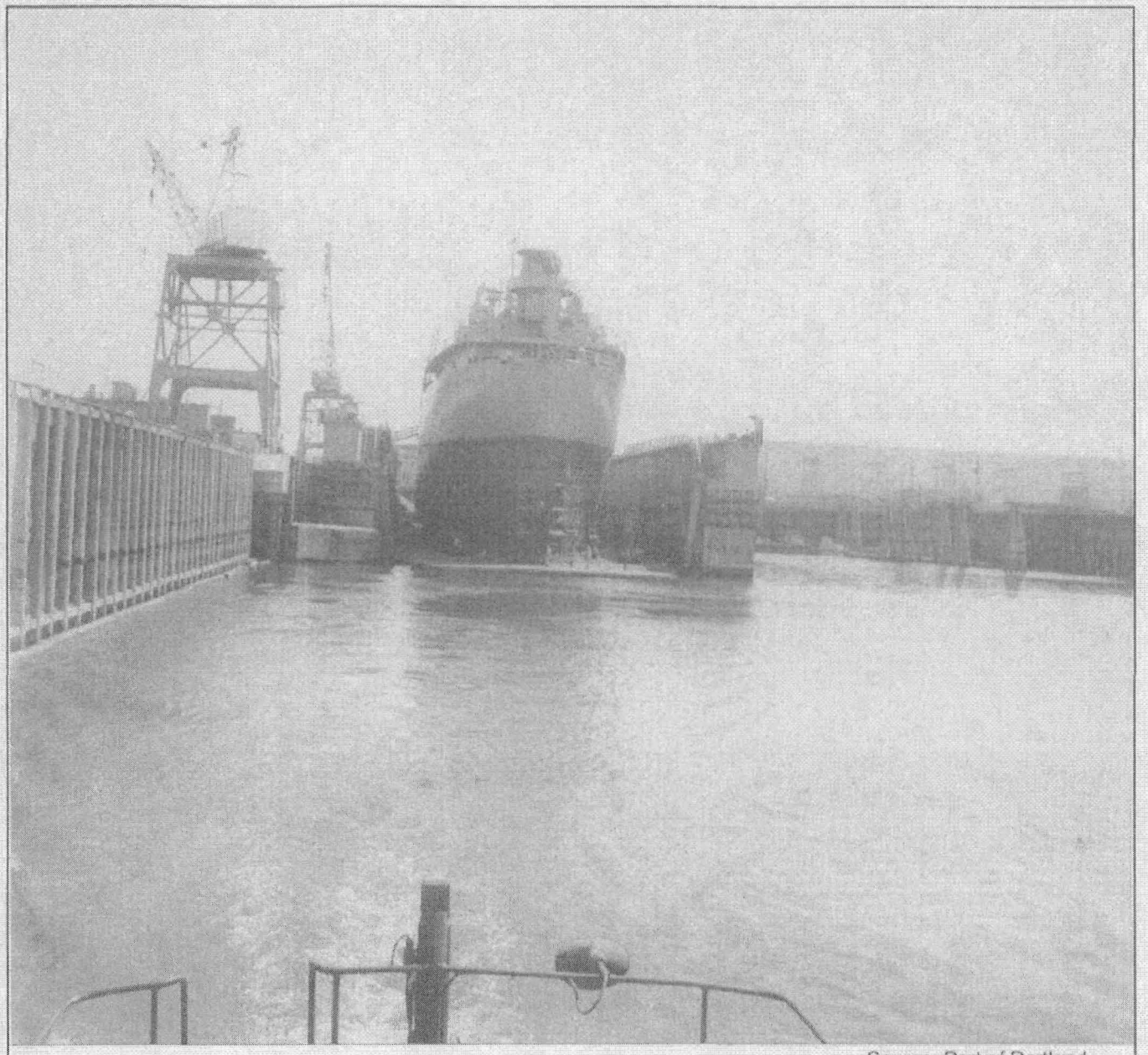
Ash Creek Associates, Inc.	Project Number 1115-03	Figure 13
	December 2006	



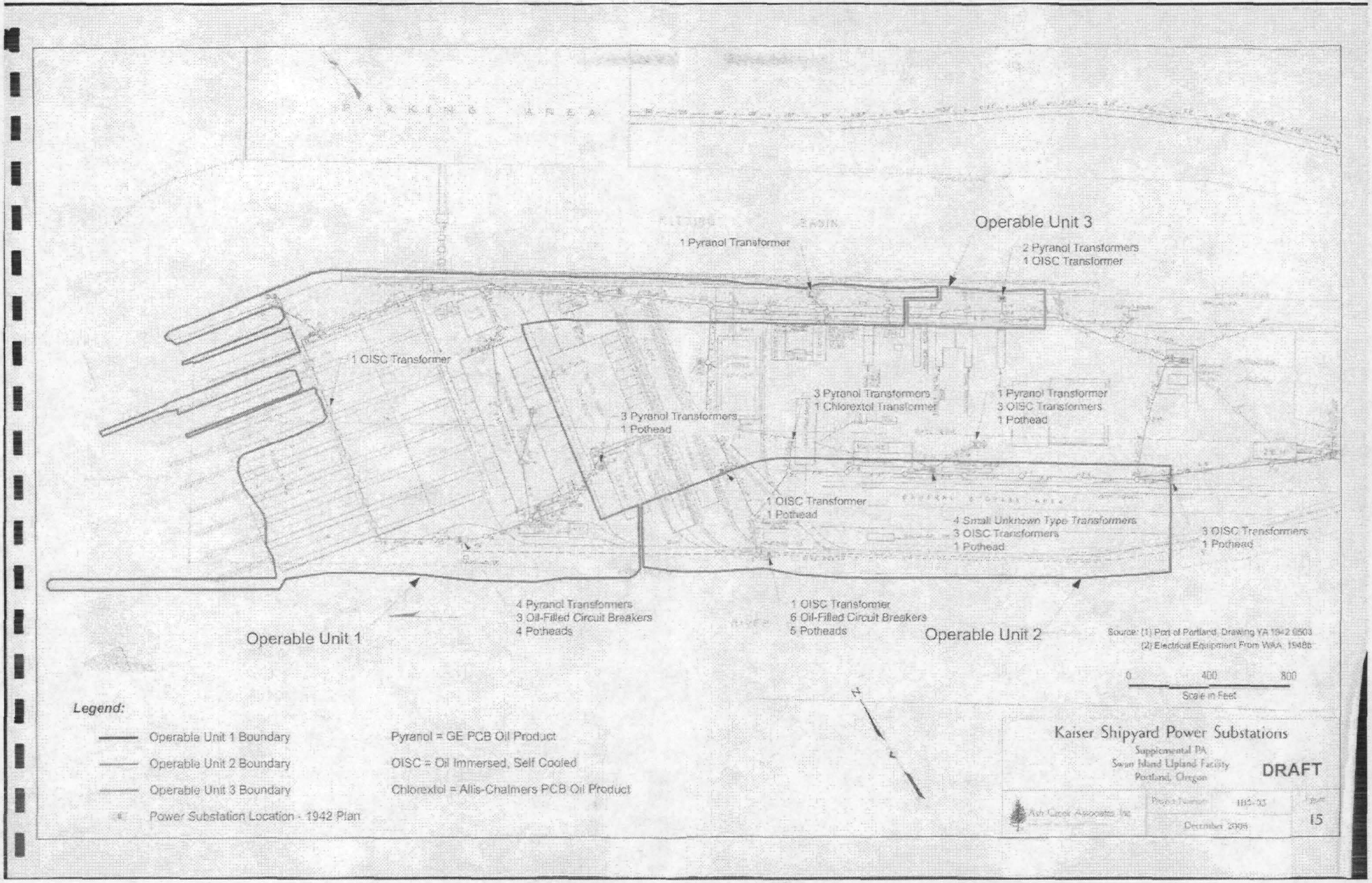
Source: Port of Portland,
Photo SI 1945 4001 00 0007

Dry Dock YFD-69 (Dry Dock 1) - 1945

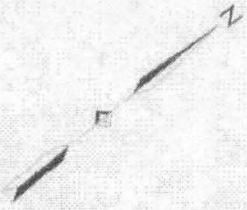
Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc	Project Number 1115-03	Figure 14
	December 2006	


Operable Unit 3
1 Pyranol Transformer
2 Pyranol Transformers
1 OISC Transformer
1 OISC Transformer
3 Pyranol Transformers
1 Pothead
3 Pyranol Transformers
1 Chlorextol Transformer
1 Pyranol Transformer
3 OISC Transformers
1 Pothead
1 OISC Transformer
1 Pothead
4 Small Unknown Type Transformers
3 OISC Transformers
1 Pothead
3 OISC Transformers
1 Pothead
4 Pyranol Transformers
3 Oil-Filled Circuit Breakers
4 Potheads
1 OISC Transformer
6 Oil-Filled Circuit Breakers
5 Potheads
Operable Unit 1
Operable Unit 2
Source: (1) Port of Portland, Drawing YA 1942 0503
(2) Electrical Equipment From WAA, 19486
0
400
800
Scale in Feet
N
Legend:
Operable Unit 1 Boundary
Operable Unit 2 Boundary
Operable Unit 3 Boundary
Power Substation Location - 1942 Plan
Pyranol = GE PCB Oil Product
OISC = Oil Immersed, Self Cooled
Chlorextol = Allis-Chalmers PCB Oil Product
Kaiser Shipyard Power Substations
Supplemental PA
Swan Island Upland Facility
Portland, Oregon
DRAFT
Ash Creek Associates, Inc.
December 2006
15

Source: Port of Portland,
Photo SI 1948 4002 00 0001



Swan Island Shipyard - 1948

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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Ash Creek Associates, Inc.	Project Number 1115-03	Figure 16
	December 2006	

Source: Ackroyd Photography
Photo 2420-19

N

Former Shipways and Dry Dock 1 - 1950

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		17

Source: Port of Portland,
Photo YA 1951 4002 00 0001

N

Shipway Demolition - 1951

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

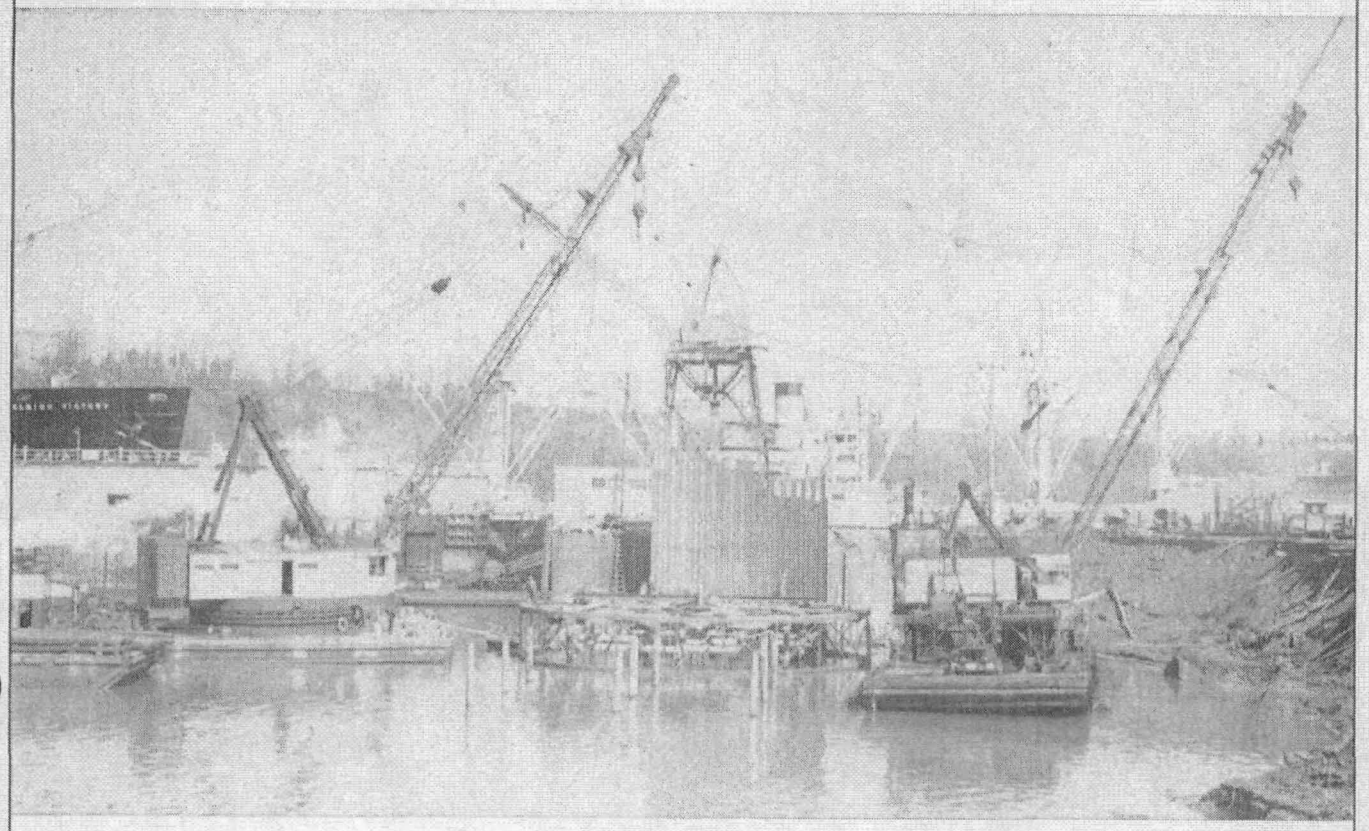
DRAFT

Ash Creek Associates, Inc.

Project Number 1115-03

December 2006

Figure 18



Source: Port of Portland,
Photo YA 1951 4001 00 0008

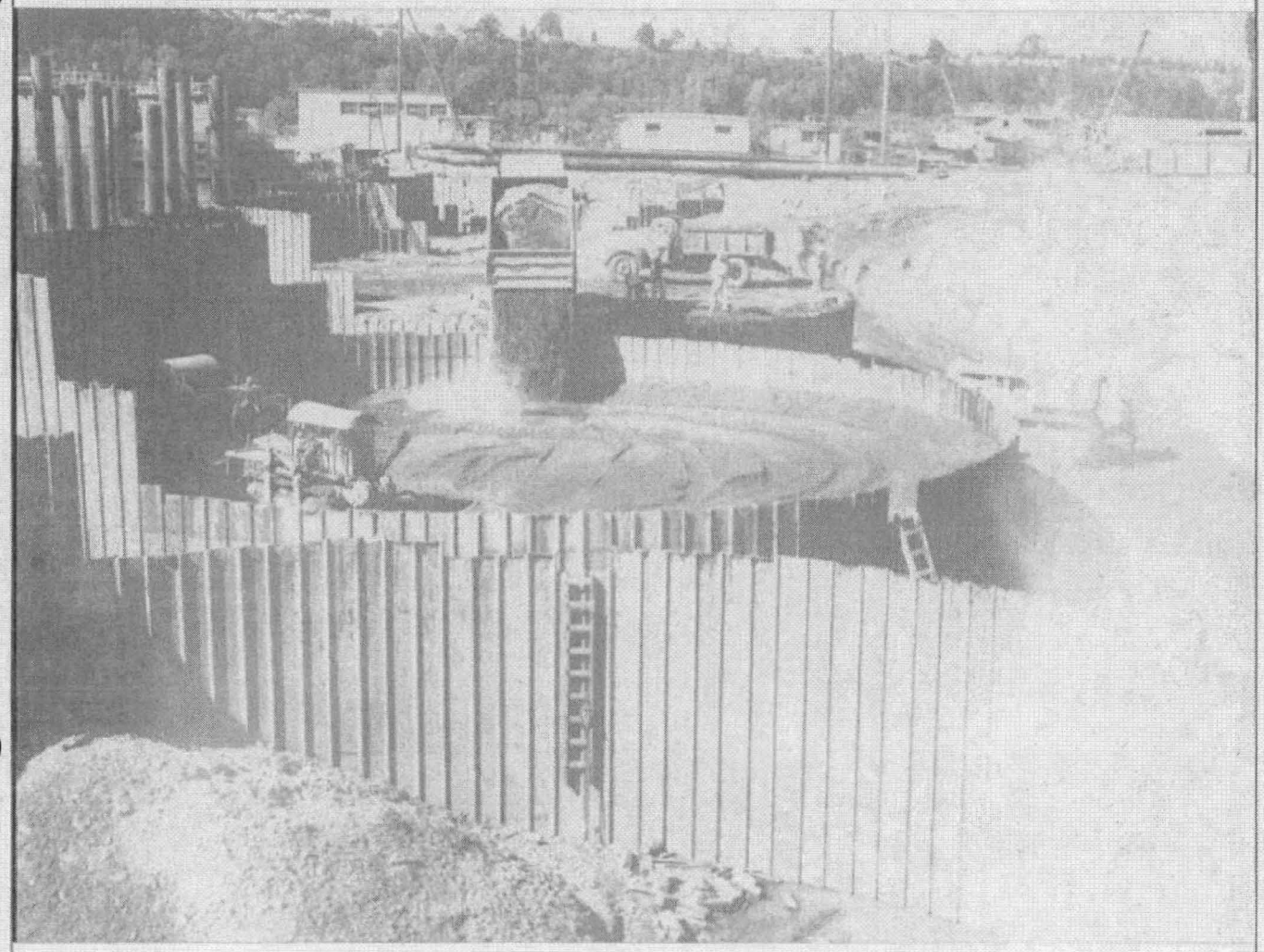
N

Bulkhead Construction for New Basin - 1951

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.	Project Number 1115-03	Figure 19
	December 2006	



Source: Port of Portland,
Photo YA 1951 4001 00 0021

N

New Bulkhead Cell Construction - 1951

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.	Project Number 1115-03	Figure 20
	December 2006	

Source: Ackroyd Photography
Photo 3882-1

N

Former Shipways and Dry Dock 1 - 1952

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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Ash Creek Associates, Inc.	Project Number 1115-03	Figure 21
	December 2006	

Source: Port of Portland,
Photo SI 1956 4001 00 0003

Shipyard - 1956

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		22

Source: Western Ways
4-28-58 #08

Shipyard in 1958
Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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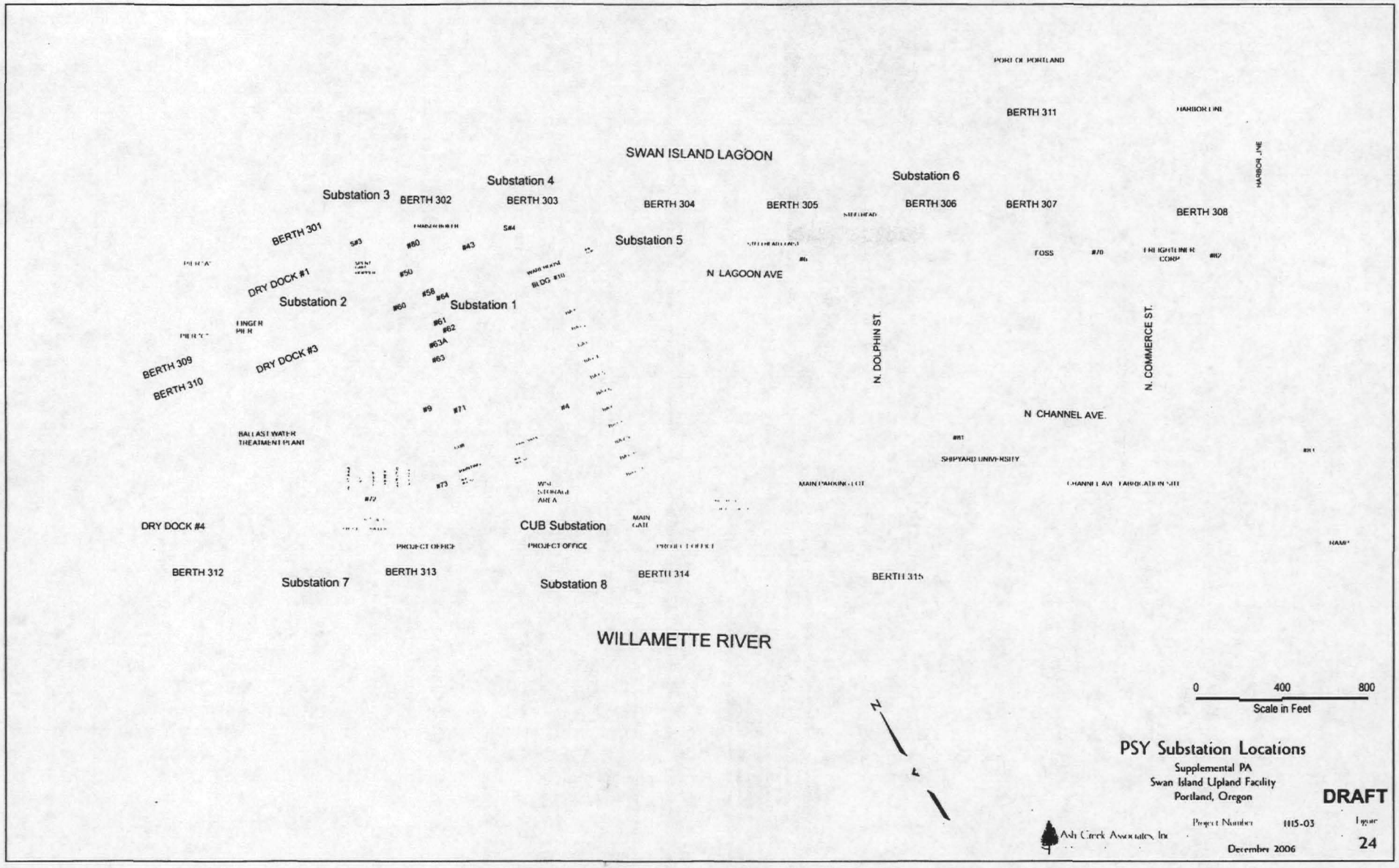
Ash Creek Associates, Inc.	Project Number 1115-03	Figure 23
	December 2006	



PSY Substation Locations

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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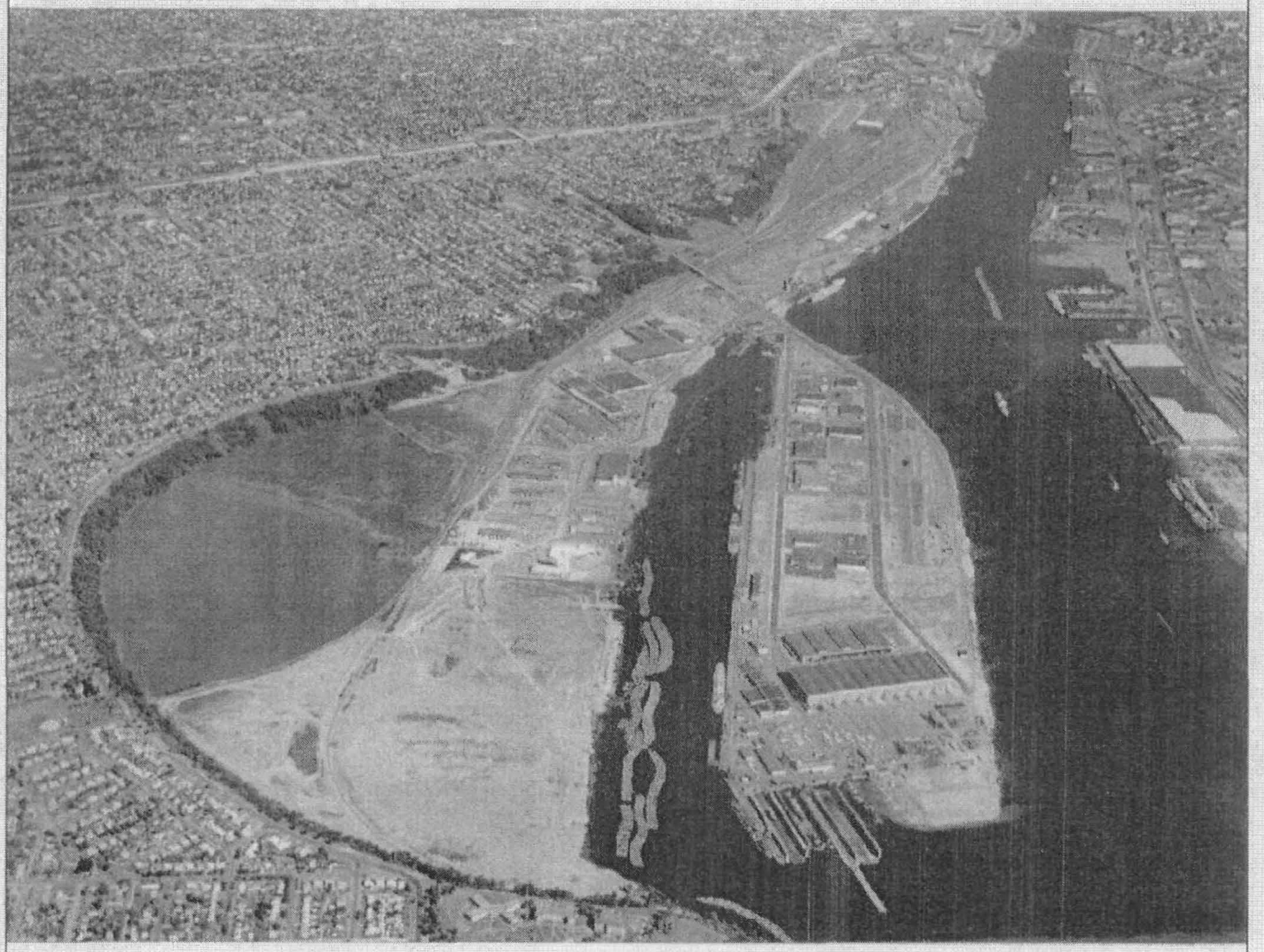
Ash Creek Associates, Inc

Project Number 1115-03

December 2006

Figure 24

DEQ012845



Source: Ackroyd Photography
Photo 13322-5

N

Portland Shipyard - Circa 1965

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.	Project Number 1115-03	Figure 25
	December 2006	

Source: Ackroyd Photography
Photo 11515-5

N

Dry Docks 1, 2, and 3

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		26

Source: Mather Corporation
Photo 7684-32

N

New Yard Construction - 1978

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.	Project Number 1115-03	Figure 27
	December 2006	

Source: Ackroyd Photography
Photo 4865-8

N

Berths 1 Through 8 - 1953

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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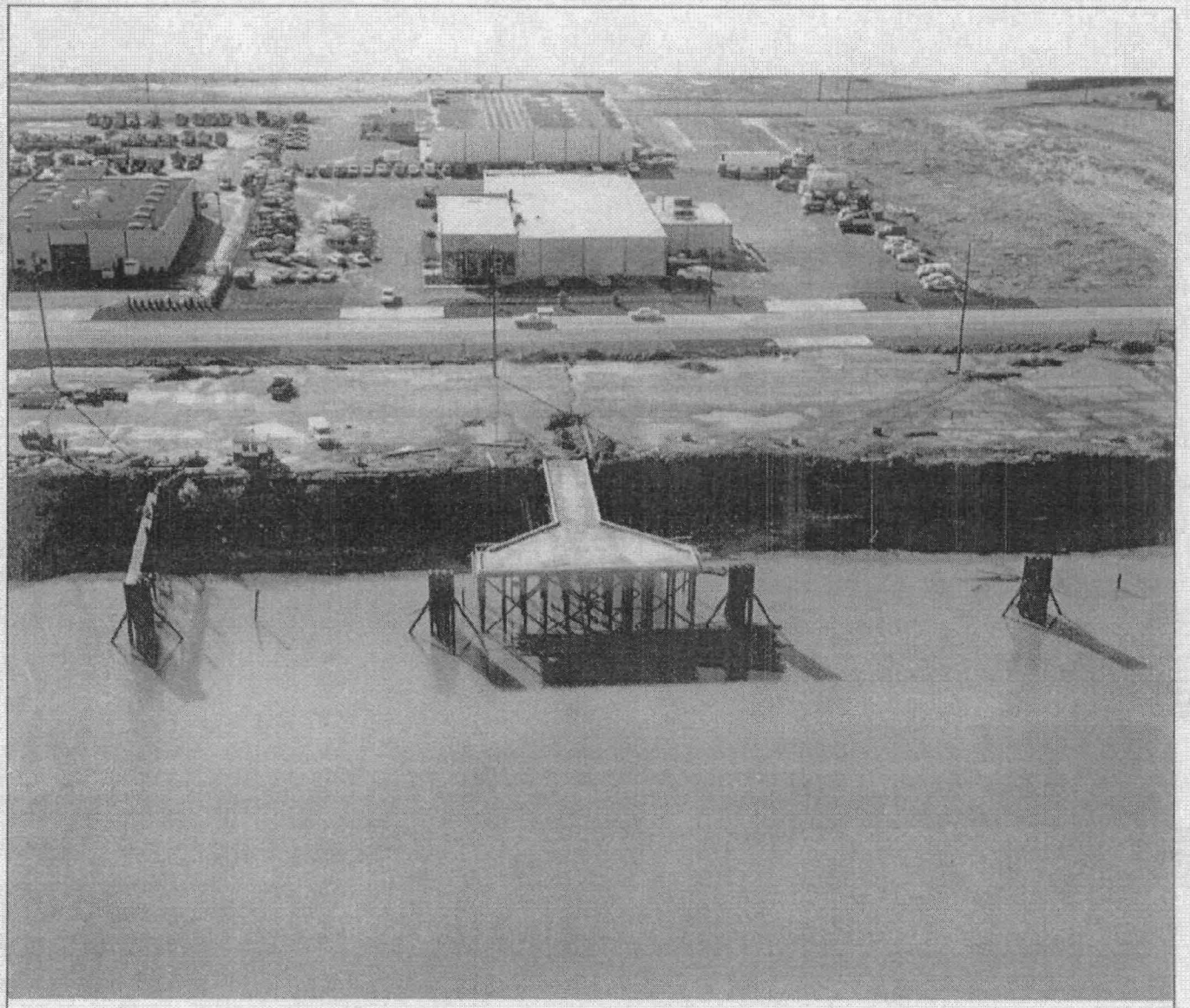
Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		28



Source: Port of Portland,
Port Photo 454PC-3

N

Berth 306 - 1968

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.	Project Number	1115-03	Figure
		December 2006	29

Source: Port of Portland,
Unmarked Photo Dated 8/26/1974

Portland Shipyard - 1974

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc	Project Number	1115-03	Figure
	December 2006		30

Source: Port of Portland,
Photo YA 1975 4001 00 0001

Portland Shipyard - 1975

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, inc

Project Number	1115-03	Figure
December 2006		31

Source: Port of Portland,
Unmarked Photo of BWTP

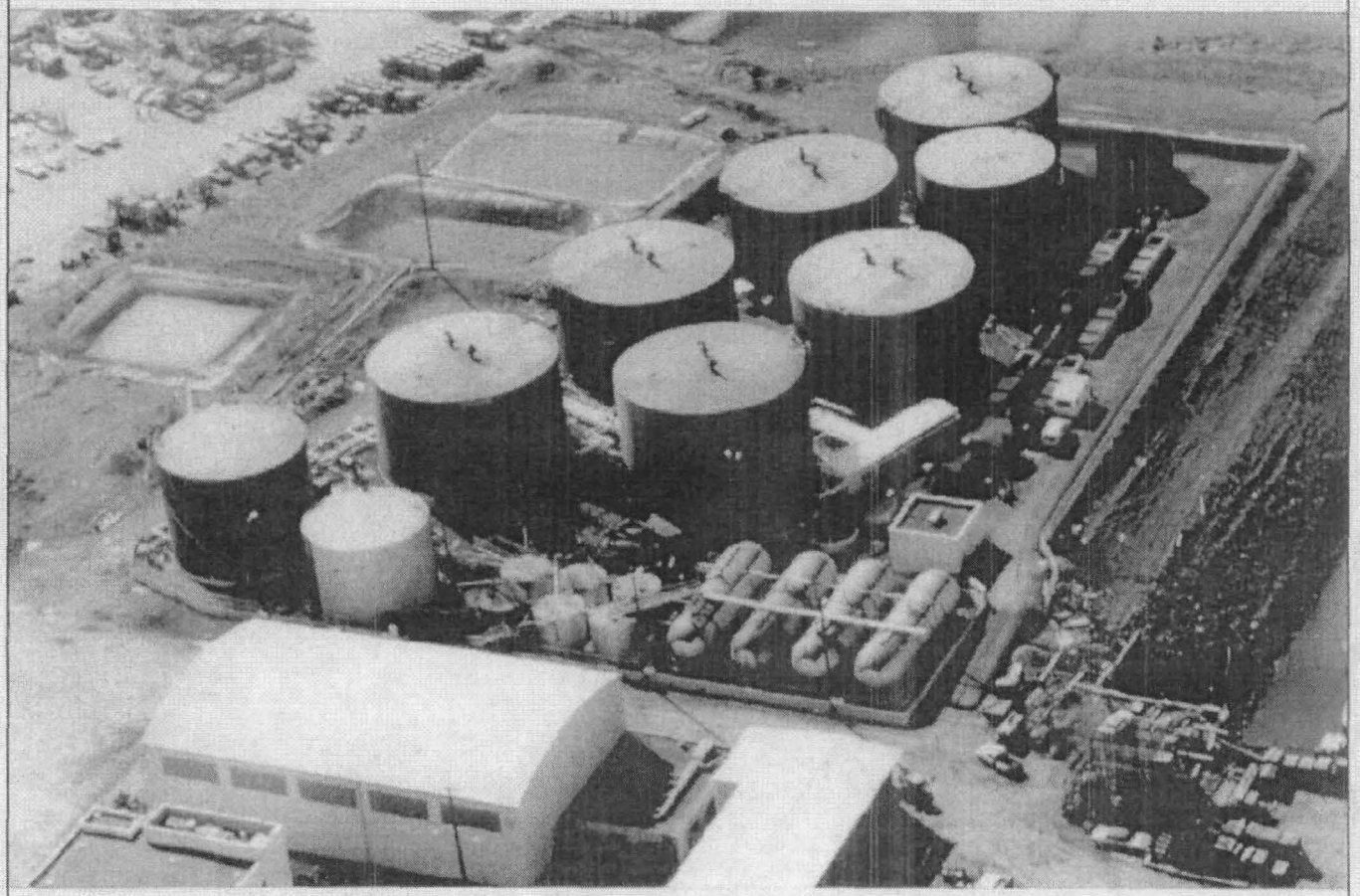
N

New BWTP Under Construction - Circa 1979

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc	Project Number: 1115-03	Figure: 32
	December 2006	



Source: Port of Portland,
Unmarked Photo of BWTP
with Ponds

N

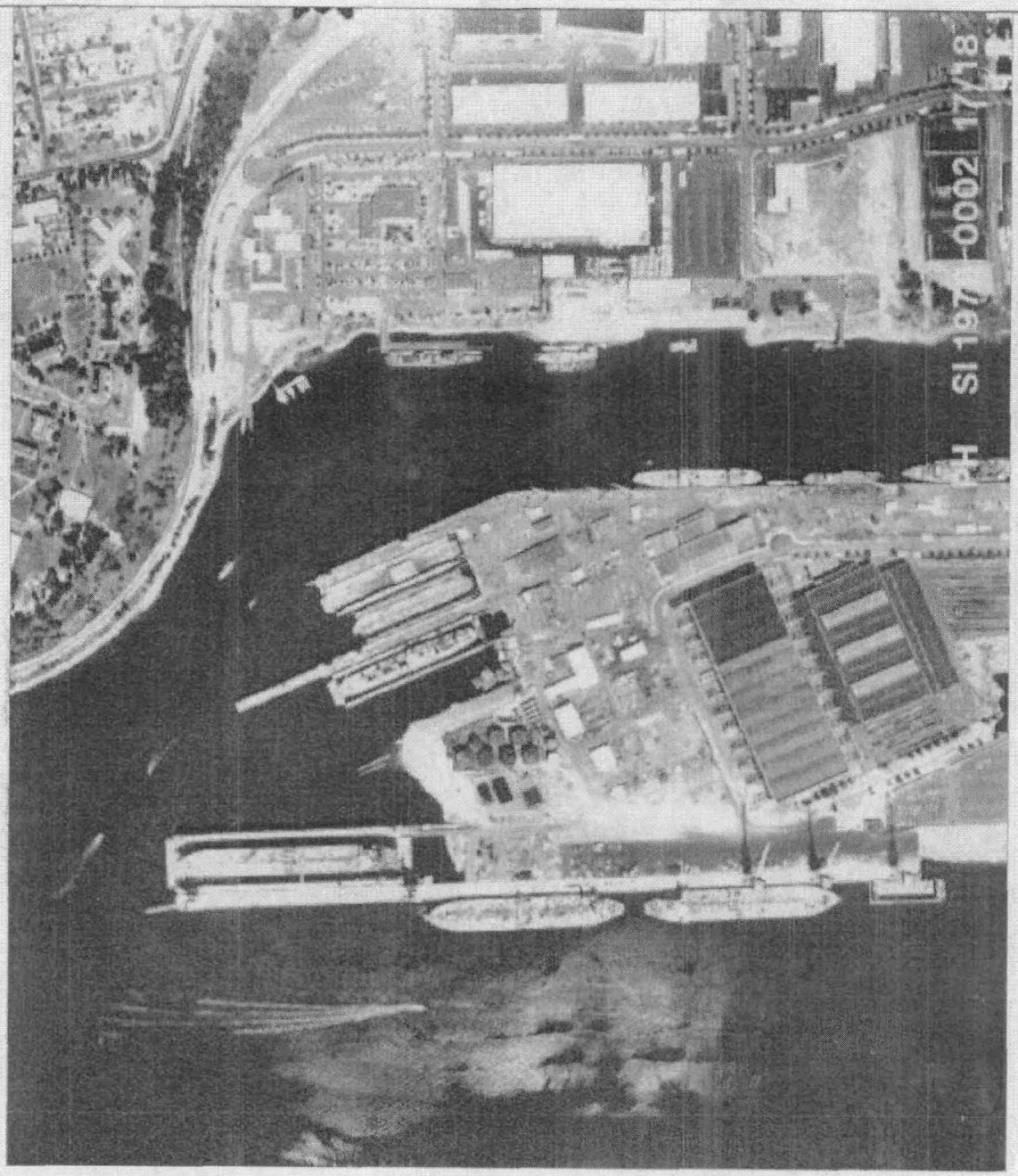
New BWTP Circa 1979

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		33



N

0 600 1200

Approximate Scale in Feet

Source: Port of Portland,
Photo SI 1979-0002 17/18

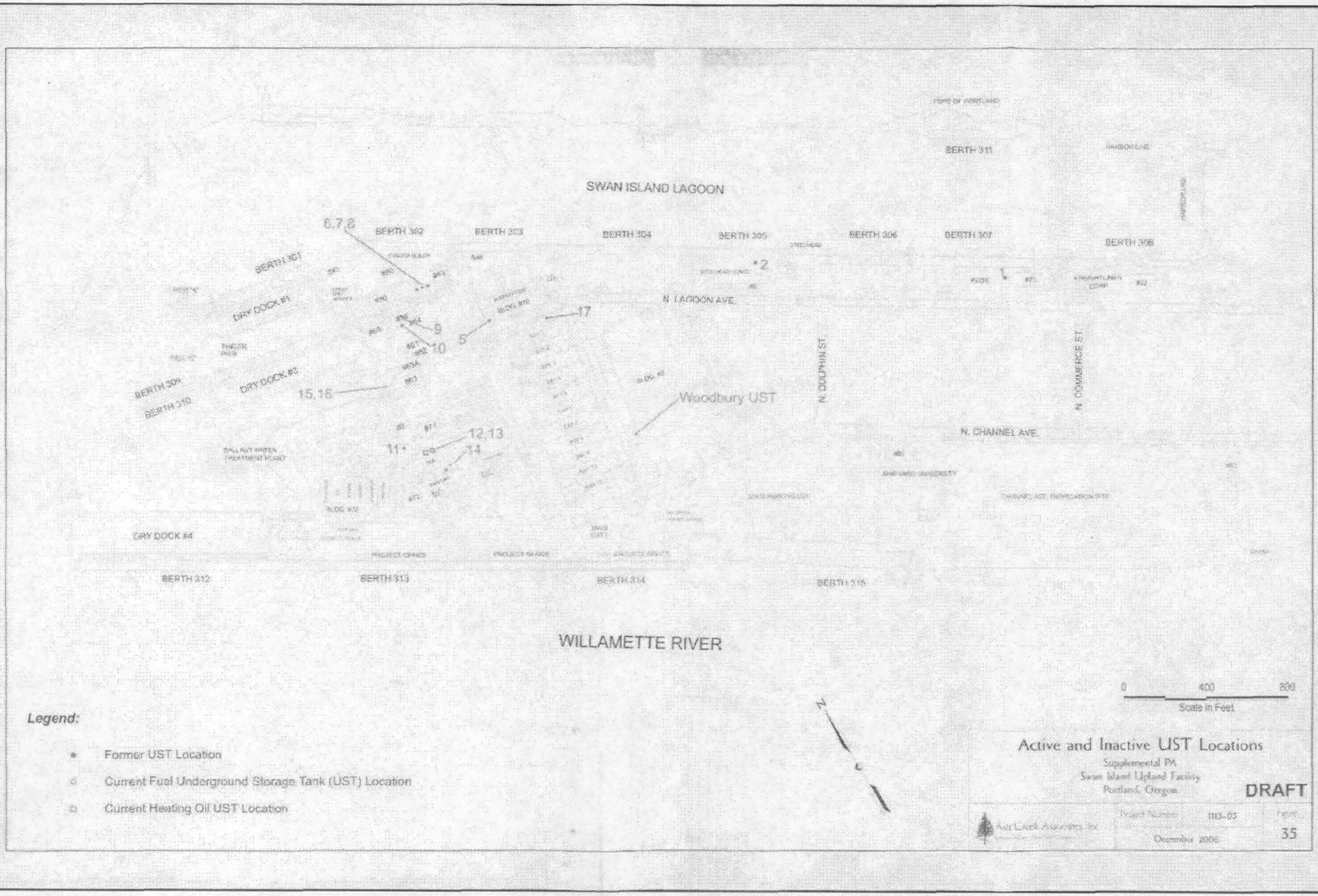
1979 Aerial Photograph

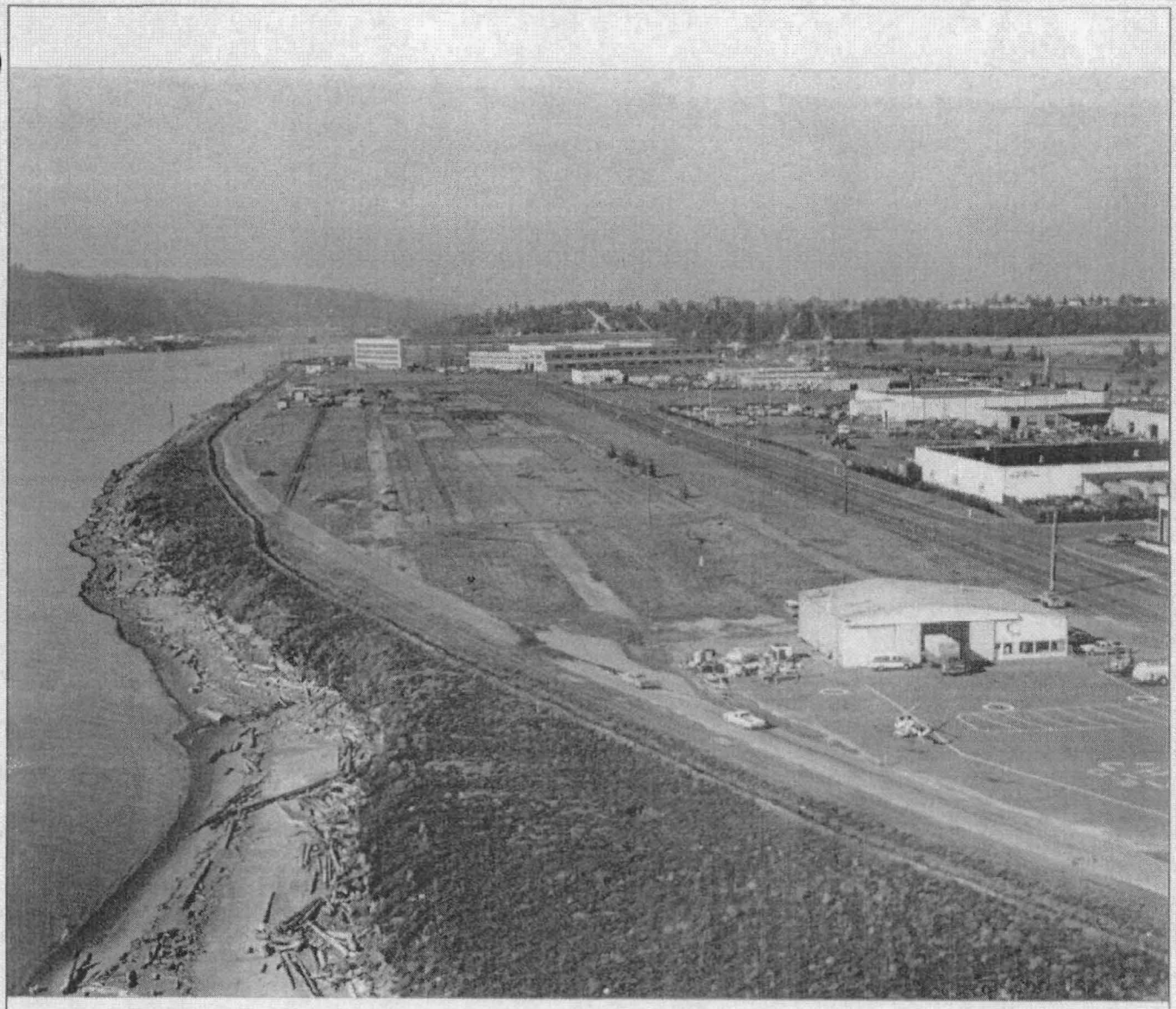
Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		34


SWAN ISLAND LAGOON
BERTH 311
BERTH 307
BERTH 306
BERTH 305
BERTH 304
BERTH 303
BERTH 302
BERTH 301
BERTH 308
N. LAGOON AVE.
N. DOLPHIN ST.
N. COMMERCE ST.
N. CHANNEL AVE.
DRY DOCK #1
DRY DOCK #2
DRY DOCK #4
BERTH 309
BERTH 310
BERTH 312
BERTH 313
BERTH 314
BERTH 315
6,7,8
9
10
5
17
15,16
11
12,13
14
*2
Woodbury UST
BALLAST WATER TREATMENT PLANT
WILLAMETTE RIVER
0
400
800
Scale in Feet
Legend:
Former UST Location
Current Fuel Underground Storage Tank (UST) Location
Current Heating Oil UST Location
Active and Inactive UST Locations
Supplemental PA
Swan Island Upland Facility
Portland, Oregon
DRAFT
Project Number
IHS-03
December 2006
35



Source: Port of Portland,
Port Photo 452PC-27

N

Operable Unit 2 - 1968

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.	Project Number 1115-03	Figure 36
	December 2006	

Source: Ackroyd Photography
Photo 19074-9

N

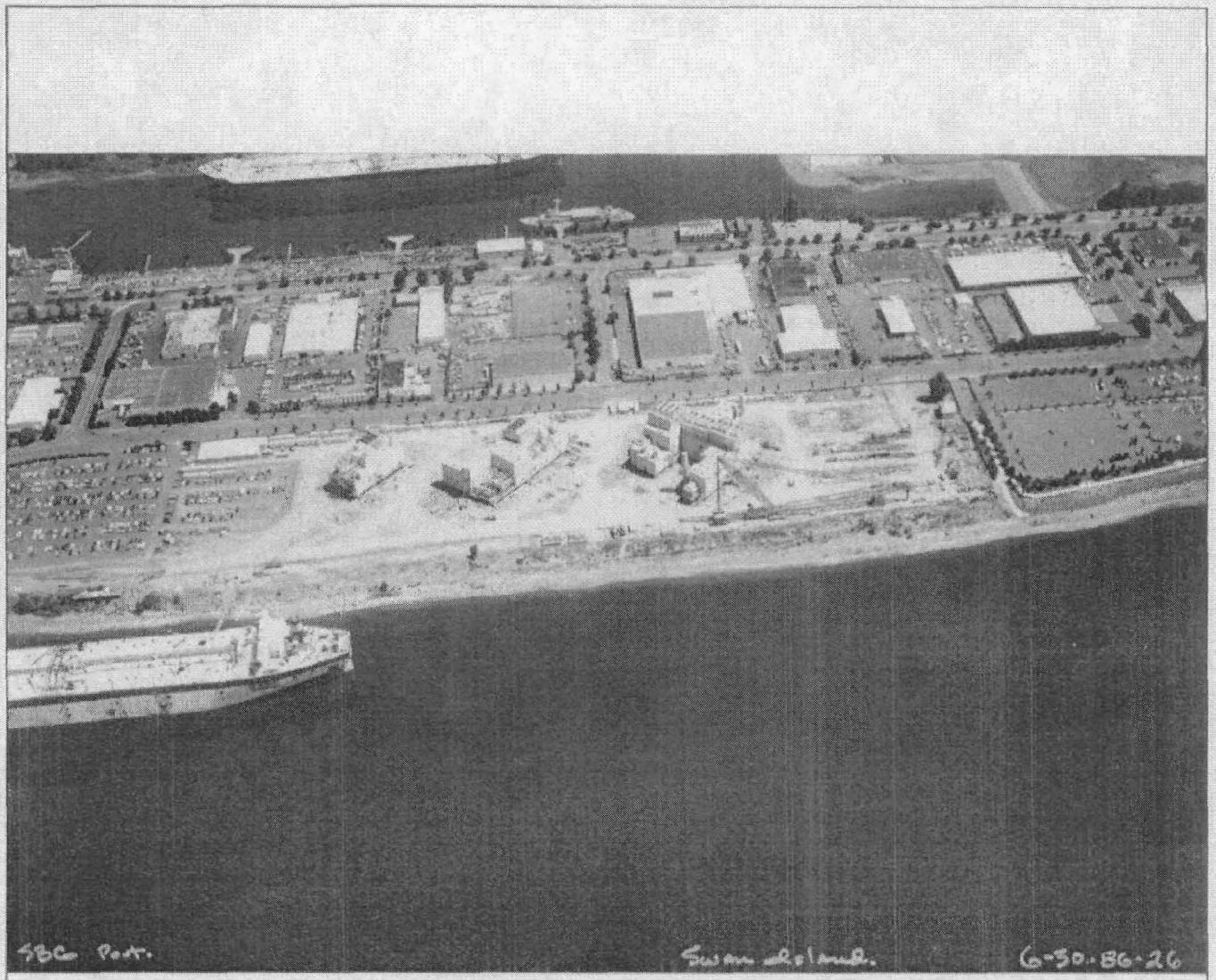
Operable Unit 2 - 1974

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		37



Source: Port of Portland,
Photo "Module Fab Site 6-30-1986"

N

Module Construction on Operable Unit 2 - 1986

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc.

Project Number 1115-03

December 2006

Figure 38

Source: Port of Portland,
Photo SI 1988 0002 00 0001

N

0 1000 2000

Approximate Scale in Feet

1988 Aerial Photograph

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

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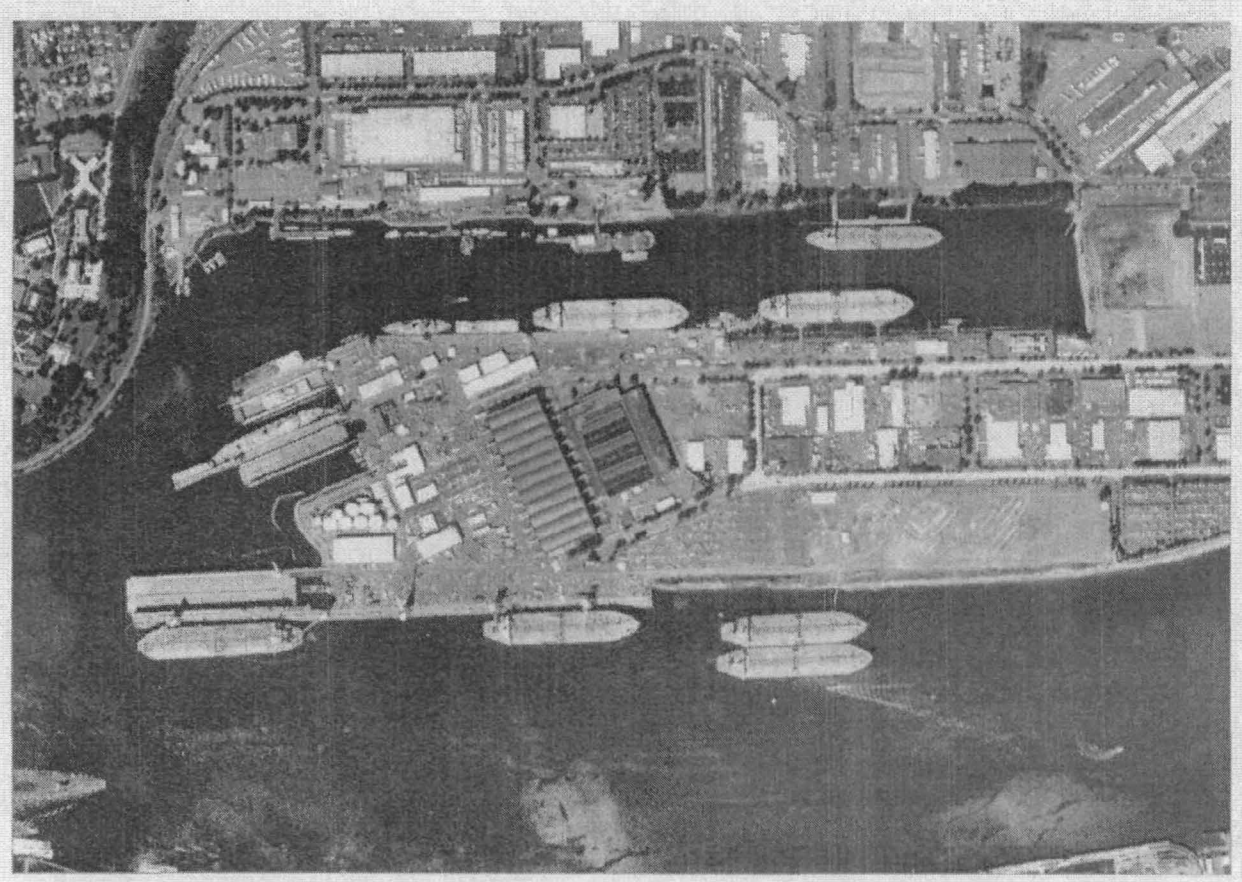
Ash Creek Associates, Inc.

Project Number	1115-03	Figure
December 2006		39



Source: Port of Portland,
Photo SI 1997 0001 00 0002

N

0 1000 2000

Approximate Scale in Feet

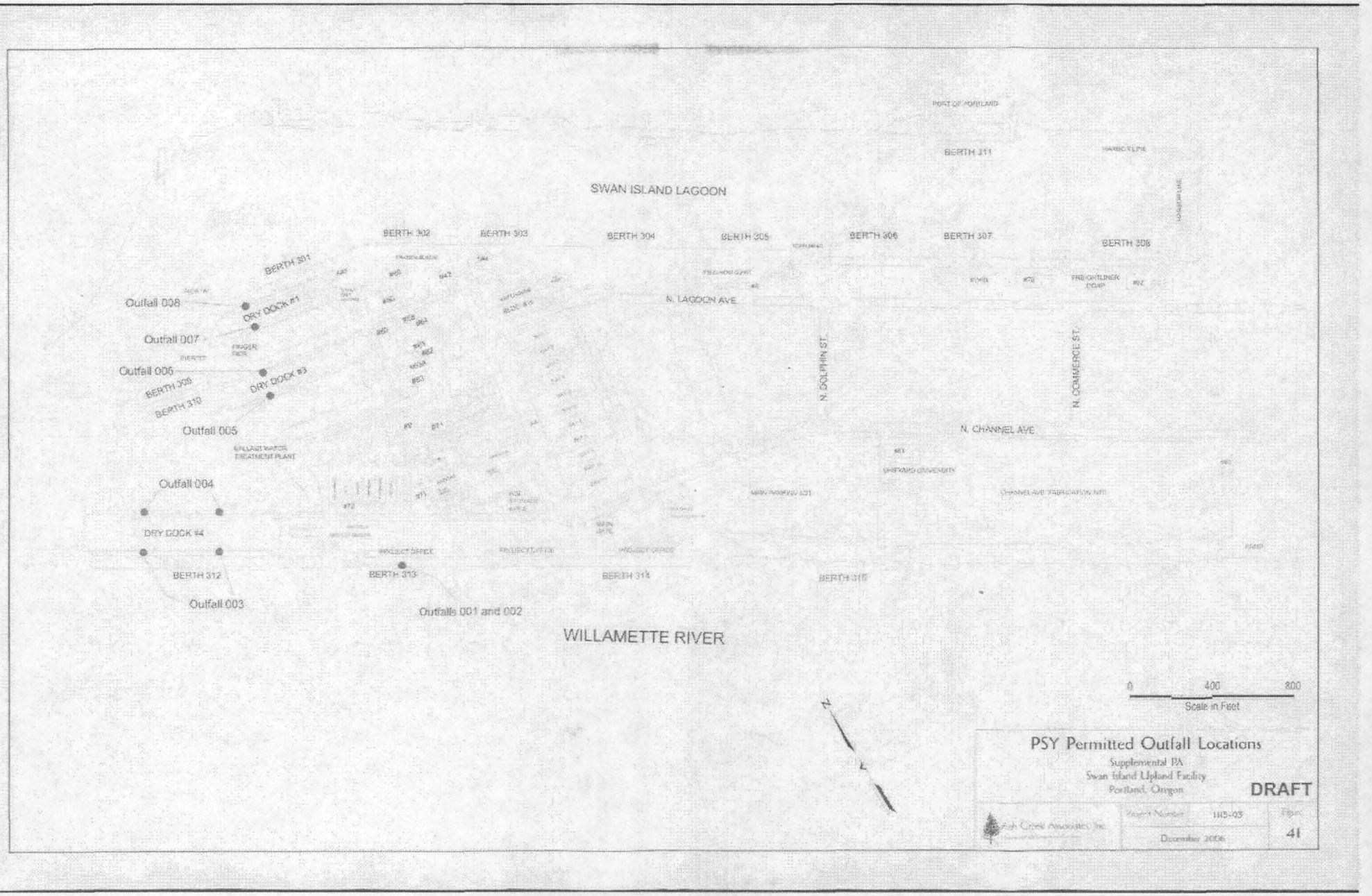
1997 Aerial Photograph

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

DRAFT

Ash Creek Associates, Inc

Project Number	1115-03	Figure
December 2006		40


SWAN ISLAND LAGOON
BERTH 301
BERTH 302
BERTH 303
BERTH 304
BERTH 305
BERTH 306
BERTH 307
BERTH 308
BERTH 311
Outfall 008
Outfall 007
Outfall 006
Outfall 005
Outfall 004
DRY DOCK #1
DRY DOCK #3
DRY DOCK #4
BERTH 309
BERTH 310
BERTH 312
BERTH 313
BERTH 314
BERTH 315
Outfall 003
Outfalls 001 and 002
N. LAGOON AVE.
N. SOLPHIN ST.
N. COMMERCE ST.
N. CHANNEL AVE.
WILLAMETTE RIVER
0
400
800
Scale in Feet
N
PSY Permitted Outfall Locations
Supplemental PA
Swan Island Upland Facility
Portland, Oregon
DRAFT
Project Number 1185-03
December 2006
Figure 41

DEQ012862

Source: Port of Portland,
Photo SI 2000 0001 00 0005

N

0 600 1200

Approximate Scale in Feet

2000 Aerial Photograph

Supplemental PA
Swan Island Upland Facility
Portland, Oregon

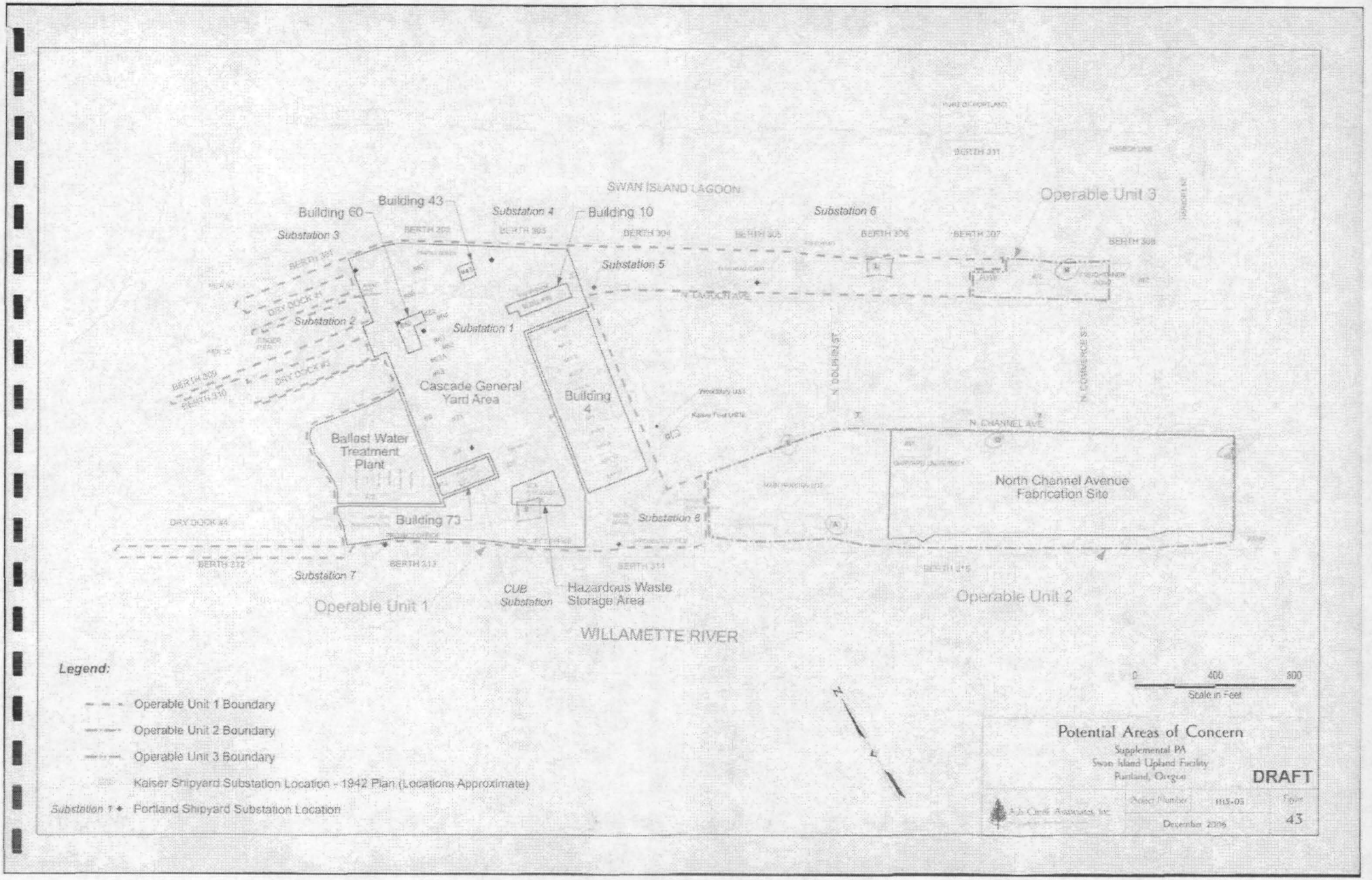
DRAFT

Ash Creek Associates, Inc

Project Number 1115-03

December 2006

Figure 42


SWAN ISLAND LAGOON
Building 60
Building 43
Substation 4
Building 10
Substation 6
Substation 3
Substation 5
Substation 2
Substation 1
Cascade General Yard Area
Building 4
Ballast Water Treatment Plant
Building 73
Substation 8
Substation 7
CUB Substation
Hazardous Waste Storage Area
Operable Unit 1
Operable Unit 2
Operable Unit 3
North Channel Avenue Fabrication Site
WILLAMETTE RIVER
N. DOLPHIN ST
N. CONCORD ST
N. CHANNEL AVE
N. TAMOUK AVE
DRY DOCK #3
DRY DOCK #4
BERTH 309
BERTH 310
BERTH 312
BERTH 313
BERTH 314
BERTH 315
BERTH 301
BERTH 302
BERTH 303
BERTH 304
BERTH 305
BERTH 306
BERTH 307
BERTH 308
BERTH 311
Legend:
Operable Unit 1 Boundary
Operable Unit 2 Boundary
Operable Unit 3 Boundary
Kaiser Shipyard Substation Location - 1942 Plan (Locations Approximate)
Substation 1 ✦ Portland Shipyard Substation Location
0
400
800
Scale in Feet
N
Potential Areas of Concern
Supplemental PA
Swan Island Upland Facility
Portland, Oregon
DRAFT
Project Number 1115-03
Figure
December 2006
43

DEQ012864

Appendix A

Appendix A

Airport Tenants and Contractors

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APPENDIX A
AIRPORT TENANTS AND CONTRACTORS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Start	End	Company	Area of Operation	Type of Operation
1927		U.S. Naval Air Reserve	Hangars	Hangars for Naval land planes and seaplanes
1928	1929	McKenzie-Morrow Aviation Company	Hangar & Office Space	Commercial Aviation
1930	1940	Northwest Airlines	Hangar	Commercial Aviation
1930		Portland Airways, Inc.	Unknown	Unknown
1933	1938	Richfield Oil Corporation	Oil Pump House & Fuel Pit	Aviation Fueling
1936		Portland Air Service, Inc.	Hangar 2	Airplane storage
1938	1942	Tide Water Associated Oil Company	Oil Pump House & Fuel Pit	Aviation Fueling
1938	1943	Henry Corbett, USA	Office Space	Unknown
1938		Dave Lewis Aircraft Company	Unknown	Commercial Aviation
	1940	Shell Oil Company	Oil Tanks in Equipment Yard	Aviation Fueling
	1940	Standard Oil	Oil Tanks in Equipment Yard & South of Hangars	Aviation Fueling
	1940	Union Oil Company	Oil Tanks in Equipment Yard	Aviation Fueling
1940		Commercial Aircraft Company, Inc.	Hangar B	Commercial Aviation
1940		State of Oregon Military Department	Hangar	National Guard Air Squadron
1940		U.S. Army Air Corps	Barracks, Admin., Service & Operations Facilities	Military
1940	1950	Civil Aeronautics Administration	Unknown	Civilian Pilot Training Services
1940		Scott Aircraft Company	Hangar B	Commercial Aviation
1940	1942	U.S. Department of Commerce	Administration Building	Government
	1942	Art Whitaker	Unknown	Unknown
	1942	Associated Oil (a/k/a Tide Water Associated Oil Company)	Oil Tanks in Equipment Yard	Aviation Fueling & Service Station
	1942	Betty's Manufacturing Company	Unknown	Unknown
	1942	Commercial Aircraft, Inc.	Unknown	Commercial Aviation
	1942	Jerry Wildman	Unknown	Unknown
	1942	Lee Scott	Unknown	Unknown
	1942	Mrs. Bessie Halladay	Unknown	Unknown
	1942	Multnomah Flying Club	Unknown	Unknown
	1942	Portland Flying Service	Unknown	Unknown
	1942	Robert Erickson	Unknown	Unknown
	1942	S & M Flying Service	Unknown	Unknown
	1942	Tilse Flying Service	Unknown	Unknown

SUTTER Jennifer

From: Anderson, Nicole [Nicole.Anderson@portofportland.com]
Sent: Friday, May 19, 2006 12:58 PM
To: SUTTER Jennifer; Brown, Stu
Cc: Anderson, Nicole
Subject: RE: Shipyard investigation

Hi Jennifer, thanks for the information. Our records reflect EJ Bartells was in Building 10 (east side of Bldg 4) and Building 72 (near the BWTP) from about 1951 through at least 1992. Their occupancy and operations will be addressed in the supplemental PA that we're working on right now. Also, as an FYI for you because I'm sure you're still getting your copies of the Port's letters, the Port did send the VCP notice letter to EJ Bartells as well. It doesn't sound like this gentleman is affiliated with them, but we've included them as well so they may have the opportunity to comment on the VCP.

Thanks!

Nicole

From: SUTTER Jennifer [mailto:SUTTER.Jennifer@deq.state.or.us]
Sent: Friday, May 19, 2006 9:29 AM
To: Anderson, Nicole; Brown, Stu
Cc: SUTTER Jennifer
Subject: Shipyard investigation

Nicole and Stu
Yesterday I received a call from one of the recipients of the Port letter regarding the agreement. I think he mainly called to let me know he had been working on Swan Island for several decades and thus was familiar with a lot of the history including contaminant sources. He mentioned one building in particular that seemed of particular concern and I cannot find any documentation of it in the previous investigations conducted at the site. Apparently the building is still present (east side of Port building?) but not currently in use and formerly housed a company known as EJ Bartell, which produced asbestos blankets and other asbestos products. I'm not sure if it is on the shipyard property or not, but wondered if you knew anything about this and if it is something that warrants further investigation.
I'll check in with our Site Assessment folks as well.
Thanks!
Jennifer

Appendix B

Appendix B

Summary of Historical Building Uses

APPENDIX B
SUMMARY OF HISTORICAL BUILDING USES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 – 1949	1949 – 1975	1976 – 1996	1996 – Present
OU1	4	*Constructed in 1942* Assembly building (~1945) Soap & perfume manufacturing (1947-1950)	*Grain storage, marine repair, shipbuilding and general metal fabricating and machining* Electric company (1958) Log brokerage & exporters (1950-1963) Marine equipment company (1956) Marine hydraulic company (1967-1974) Marine supplier (1959-1962) Metal fabrication (1973-1976) Refrigeration manufacturer (1950-1958) Resaw lumber & salvage materials(1952) Ship repair company (1986-1987) Shipping company (1975) Stone company (1964) Towboat company (1962-1965)	Marine coatings company (1991-1993) Metal fabrication (1973-1976) Ship repair company (1990-1994)	
	Annex			& (1994-1996) Asbestos abatement contractor (1994-1995) Boiler & mechanical company (1992-1993) College art association (1994) Environmental consulting (1991-1993) Industrial cleaning company (1987) & (1991-1995) Marine architect (1994-present) Marine consultant (1991-1993) Marine surveyor (1981-1991) Non-destructive testing (1991-1993) Ship repair companies (1985-1989) & (1991-1992) Thermal mechanical insulation (1994-1999)	Marine architect (1994-present) Ship repair company (1994-1996) Thermal mechanical insulation (1994-1999) Wire & iron company (2000-present)
	Bay 1	Surplus property dealers (1948-1957)	Grain storage (1954-1957) Marine repair & supply (1955-1973) Surplus property dealers (1948-1957)	Industrial fabrication (1987-1993) Metal fabrication (1995) Refrigeration contractors (1980-1986) Ship repair (1985-1993) Steel parts storage & assembly (1995)	Wire & iron fabrication (1998-present)
	Bay 2	Military (1949-1950) Surplus property dealers (1948-1957)	Grain storage (1954-1957) Metal fabrication (1958-1971) & (1974) Military (1949-1950) Office trailer parking (1972-1973) Ship repair (1974-1994) Surplus property dealers (1948-1957)	Industrial fabrication (1987-1995) Module fabrication (1984-1988) Ship repair (1974-1994) Steel fabrication (1974-1982) Storage (1995) Trailer company (1972-1973)	Ship repair (1997-present) Wire & iron company (2000-present) - steel fabrication
	Bay 3	Surplus property dealers (1948-1957)	Grain storage (1958-1963) Metal sign manufacturer (1971-1979) Ship repair (1979-1991) Steel fabrication & supply (1966) Surplus property dealers (1948-1957)	Engine manufacturing & repair (1986-1998) Metal sign manufacturer (1971-1979) Module fabrication (1984-1988) Ship repair (1979-1991) Turbine engine manufacturing & repair (1986-1998)	Turbine engine manufacturing & repair (1986-1998)
	Bay 4	Surplus property dealers (1948-1957)	Grain storage (1954-1963) Metal sign manufacturer (1971-1979) Ship repair (1969) Steel fabrication & supply (1966) Surplus property dealers (1948-1957)	Industrial fabrication (1995) Metal sign manufacturer (1971-1979) Module fabrication (1984-1988) Ship repair (1979-1989)	Wire & iron company (2000-present) - steel fabrication
	Bay 5	Surplus property dealers (1948-1957)	Grain storage (1954-1963) Metal sign manufacturer (1970-1979) Steel fabrication & supply (1950-1974) Surplus property dealers (1948-1957)	Industrial fabrication (1995) Metal sign manufacturer (1970-1979) Module fabrication (1984-1988) Ship repair (1979-1983) & (1985-1988)	
	Bay 6	Surplus property dealers (1948-1957)	Casting plant for aggregate concrete (1964-1965) Grain storage (1954-1963) Metal sign manufacturer (1971) Resaw lumber & salvage materials(1952-1953) Ship repair (1965-1971) Surplus property dealers (1948-1957) Tanker outfitting (1974-1986)	Module fabrication (1984-1988) Ship repair (1978-1982) & (1986-1987) & (1990-1991) Tanker outfitting (1974-1986)	

APPENDIX B
SUMMARY OF HISTORICAL BUILDING USES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 – 1949	1949 – 1975	1976 – 1996	1996 – Present
OU1 (continued)	Bay 7	Surplus property dealers (1948-1957)	Grain storage (1954-1963) Marine electronics (1961-1985) Marine painting (1952) Marine shipping (1975) Metal fabrication (1958) Ship repair (1965-1971) & (1974-1979) Surplus property dealers (1948-1957)	Marine electronics (1961-1985) Ship repair (1974-1979) & (1983) & (1986) Steel fabrication (1982)	
	Bay 8	Federal Works Administration (1948) Surplus property dealers (1948-1957)	Diesel distribution company (1964-1972) Fabrication of wire products (1971) Grain storage (1954-1963) Metal sign manufacturer (1970-1980) Ship repair (1971-1982) Steeline products (1952) Surplus property dealers (1948-1957) Truck manufacturer (1965-1970) Wire & iron company (1971)	Metal sign manufacturer (1970-1980) Ship repair (1971-1988)	
	Bay 9	Consumer materials (1949-1950) Heavy equipment manufacturing (1948-1951) Surplus property dealers (1948-1957)	Consumer materials (1949-1950) Grain storage (1954-1963) Heavy equipment manufacturing (1948-1951) Machining (1966) Plywood manufacturing (1960-1970) Ship repair (1964) & (1966-1995) Surplus property dealers (1948-1957)	Ship repair (1966-1995)	
	Bay 10	Steel supply (1947-1951) Surplus property dealers (1948-1957)	Grain storage (1954-1963) Machining (1966) Metal fabrication (1969-1977) Metal sign manufacturer (1970-1978) Plywood manufacturing (1959-1970) Ship repair (1952-1963) Steel supply (1947-1951) Steeline products (1952) Surplus property dealers (1948-1957) Transportation (1963-1974)	Metal fabrication (1969-1977) Ship repair (1978-1988)	
	Bay 11	Steel supply (1947-1951) Surplus property dealers (1948-1957)	Grain storage (1954-1963) Manufacturing (1969) Metal fabrication (1964-1977) Ship repair (1963) Steel supply (1947-1951) Surplus property dealers (1948-1957) Trailer parking (1983-1995)	Metal fabrication (1964-1977) Ship repair (1978-1988)	
	Original Building 6 *(Located adjacent & west of Building 4)*	Compressor house (~1945) Marine repair (1949-1958) Sandblasting & painting (1947-1950) Ship dismantling (1947-1949)	Grain company (1959-1960) Maine supplier (1951-1960) Marine electric company (1955-1957) Marine repair (1955-1958) Sandblasting & painting (1947-1950) Technical institute (1953) *Demolished in 1964*	[redacted]	[redacted]
	New Building 6 *(Located near Berth 305)*	[redacted]	[redacted]	*Constructed in the late 1970s* Floating home building (1984-present)	Floating home building (1984-present)
	7	Field office (~1945) Military/federal government (1949-1952) Ship dismantling company (1947-1949) Surplus pipe storage (1948)	Air patrol (1949-1952) Farmer's association (1959-1962) Federal government (1954-1955) Marine architect (1962-1963) Sales company (1950-1951) *Demolished prior to 1966*	[redacted]	[redacted]
	8	Acetylene building (~1945) Military (1949-1950) Ship dismantling (1947-1949)	Military (1949-1950) Port records repository (1969)	*Demolished in 1985*	[redacted]

APPENDIX B
SUMMARY OF HISTORICAL BUILDING USES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 – 1949	1949 – 1975	1976 – 1996	1996 – Present
OU1 (continued)	New Building 9 *(called Building 64 until late 1980s when it was renamed Building 9)*		*Current Building 9 constructed – 1965 to be a truck repair facility and machine shop* Industrial cleaning (1974-1980) Ship repair (1866-1974)	Industrial cleaning (1974-1980) Ship repair (1980-present)	Ship repair (1980-present)
	10	*Constructed in 1942 and expanded in 1945* Pipe shop and welding (~1945) Electrical shop (1949) Grain bin fabrication (1949-1953) Military (1949-1950) Ship dismantling (1947-1949)	Asbestos company (1963-1970) Boiler repair company (1961-1963) Engineering services (1962) General contractors (1974-1983) Grain bin fabrication (1949-1953) Industrial supply manufacturing (1957-1959) Insulation storage (1950-1977) Lift truck rentals (1950-1963) Log brokerage & exporters (1960-1963) Marine electronics (1951-1963) Marine shipping (1968-1975) Marine supply (1955-1973) Military (1949-1950) & (1961-1963) Office space (1952-1963) Ordnance & electronics companies (1961-1965) Printing (1950-1951) Refrigeration manufacturer (1950-1958) Repair & storage of diesel equipment (1966) Rigging company (1955-1957) Sash & door manufacturing (1950-1952) Ship chandlery (1951-1978) Ship repair companies (1950-1991) Ship supply storage (1950) Shop space (1951-1957) Steam cleaning (1963) Wire & cable company (1955-1957)	Asbestos companies (1991 & 1994-1995) Boiler repair company (1985-1986) & (1988-1996) Controls & instrument panels (1985) Environmental consulting (1994-1996) Floor installation & repair (1982-1995) General contractors (1974-1983) Hydroblasting (1992-1996) Industrial cleaning (1985-1992) Industrial painting & sandblasting (1986) Insulation manufacturing (1994-present) Insulation storage (1950-1977) Insulator business (1991-1996) Machine work (1990-present) Marine consultant (1985-present) Marine painting contractor (1987-1990) Marine surveyor (1991-present) Marine valve supplier (1986) Military support services (1991-1995) Module fabrication (1984-1988) Non-destructive testing (1990-present) Offices (1984-1985) & (1987-1995) Rubber company (1990) Ship chandlery (1951-1978) Ship repair (1950-1991) & (1994-present) Ship repair testing & inspection (1992-1995) Shipyard training (1995) Turbine engine repair & mfg (1986-1998) Vessel inspection (1984-present)	Boiler repair company (1988-1996) Environmental consulting (1994-1996) Hydroblasting (1992-1996) Insulation manufacturing (1994-present) Insulator business (1991-1996) Machine work (1990-present) Marine consultant (1985-present) Marine surveyor (1991-present) Non-destructive testing (1990-present) Ship repair (1994-present) Thermal mechanical insulation (1999-present) Turbine engine repair & mfg (1986-1998) Vessel inspection (1984-present)
	12	Carpenter shop (~1945) Cabinet & bar manufacturing (1947-1949) Diesel training school (1949-1951)	Cabinet & bar manufacturing (1947-1949) Diesel training school (1949-1951) Electrical controls manufacturer (1952) Furniture exporters (1951-1952) Ordnance & electronics company (1961) Refrigeration manufacturer (1950-1958) Tractor training company (1950-1951) *Demolished in 1962*		
	20B	Substation (~1945)	*Deactivated by 1965 & removed by 1972*		
	29	Substation (~1945)			
	30	Way end buildings (~1945) Book sales (1949-1950) Electrical equipment storage (1949) Fire extinguisher recharging (1947-1950) Novelty manufacturer (1947-1951) Printing (1947-1950) Saw teeth manufacturing (1948-1950) Ship dismantling (1947-1949) Soap & perfume manufacturing (1947-1950) Surplus pipe storage (1948) Warehouse (1948-1950)	Book sales (1949-1950) Electrical equipment storage (1949) Electrical repair contractor (1952) Fire extinguisher recharging (1947-1950) Glass company (1951-1952) Novelty manufacturer (1947-1951) Printing (1947-1950) Saw teeth manufacturing (1948-1950) Ship dismantling (1947-1949) Soap & perfume manufacturing (1947-1950) Warehouse (1948-1950) *Way End Buildings demolished by 1961*		
	31A	Utility building (~1945) Thermostat manufacturing (1948-1952)	Thermostat manufacturing (1948-1952). *Demolished by 1958*		
	31B	Utility building (~1945) Soap & perfume manufacturing (1947-1950)	Soap & perfume manufacturing (1947-1950) *Demolished by 1966*		

APPENDIX B
SUMMARY OF HISTORICAL BUILDING USES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 – 1949	1949 – 1975	1976 – 1995	1995 – Present
OU1 (continued)	35	Boiler House (1942) Ship dismantling (1947-1949)	Boiler storage (1951-1966) *Demolished by 1967*		
	38	Equipment maintenance (~1945) Crane manufacturing (1947-1948) Ship repair (1947-1954)	Ship repair (1947-1954) *Demolished by 1960*		
	43	*Constructed in 1942* Pipe assembly and fitting building (~1945) General storage for ship dismantling (1947 -1949)	Ship repair (1960-1982) & (1984-1985) & 1987-1995) Printers (1950-1954)	Industrial cleaning (1983) Refrigeration/heating business (1987-1995) Transportation (1987-1992)	Non-destructive testing (1998)
	50		*Constructed in 1951 as a contractor's building with a welding shop, machine shop, storage bays & locker room* Marine architects (1963-1973) Military (1963-1982) Ship repair (1960) & (1963-1965)	Military (1963-1982) Propeller repair & storage (1983-present)	Propeller repair & storage (1983-present)
	Bay 1		Ship repair (1953-1968) & (1970-1975)	Ship repair (1977-1981)	
	Bay 2		Ship repair (1953-1968)	Ship repair (1982) & (1986-1988)	Ship repair (1988-1998)
	Bay 3		Ship repair (1953-1971)	Ship repair (1977-1991)	
	Bay 4		Ship repair (1963-1970)	Ship repair (1977-1998)	Ship repair (1977-1998)
	Bay 5		Ship repair (1963-1969)		
	54		*Constructed in 1951; as a restroom and for paint and oil storage* Ship repair (1960)	*Paint storage; removed sometime prior to 1993*	
	Bay 1			Ship repair (1982-1989)	
	Bay 2		Ship repair (1960-1971)	Ship repair (1977-1987)	
	Bay 3			Ship repair (1970-1989)	
	Bay 4			Ship repair (1970-1982)	
	Bay 5			Ship repair (1970-1989)	
	58		*Constructed in 1957 as a diesel-fueled boiler house; an addition was constructed in the mid-1960s*	*Boiler house; converted into a garage-type structure after the boiler and heating oil UST were removed in 1989 and 1990*	*Rigging shed, storage of electrical cable, cables, tie down lines and miscellaneous equipment; vehicle parking*
	60		*Constructed in 1952; maintenance shop and air compressor; Substation 2* Ship repair (1967-1974)	*Electrical shop, machine shop, and automobile maintenance shop*	*Maintenance shop including machine services, shop services, vehicle maintenance, equipment repair, limited parts painting; steam cleaning, pressure washer, substation, and equipment storage for the electrical crew*
	61		*Constructed in 1952 & replaced in 1982; welding activities*	*Replaced in 1982*	Shipyard sign shop
	62			Constructed approximately 1993; paint shop (1995)	Paint booth and hazardous material storage shed
	63		*Constructed in 1967 as a carpenter shop; machine shop constructed in 1970* Ship chandlers (1961-1963) Ship repair (1968-1995)	Ship repair (1968-1995)	
	63A		Ship repair (1971-1975)	Ship repair (1981-1994)	
	64 *(called Building 64 until late 1980s when it was renamed Building 9 - see also 'New Building 9' above)*		*Constructed ~1965 as a truck repair facility and machine shop* Industrial cleaning (1974-1980) Ship repair (1966-1974)	Industrial cleaning (1974-1980) Ship repair (1980-present)	Ship repair (1980-present)
	71			*Constructed in 1979 as an office building*	*Offices for ship repair companies*
	72			*Constructed in 1981 for use as a cafeteria; storage of cable, hoses, electrical wires, pulleys, rigger's equipment, plywood, lumber and paint; office space; lockers/bathroom; and exercise equipment* Boiler repair company (1992-1993) Marine paint supplier (1985) Ship repair companies (1988-1995)	
	Bay 1			Marine valve supplier (1982-1995)	
	Bay 2			Ship repair companies (1988-1994)	
	Bay 3			Ship repair companies (1988-1994)	
	Bay 4			Ship repair company (1987-1994)	
	Bay 5			Ship repair companies (1962-1967) & (1989-1994)	

APPENDIX B
SUMMARY OF HISTORICAL BUILDING USES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 – 1949	1949 – 1975	1976 – 1996	1996 – Present
OU1 (continued)	Bay 6			Boiler repair company (1981-1986) Insulation storage (1981-1993) Ship repair companies (1986-1987) & (1989-1994)	
	73			*Constructed in 1980-1981 for sandblasting, grit blasting, metal shot blasting and painting* Environmental response (1980-1990) Hydroblasting (1992-1995) Marine valve supplier (1982-1995) Paint shop (1981-1989)	Ship repair (1992-present)
	Bay 1			Paint supplier (1991) Sandblasting contractor (1987) Ship repair (1981-present) Ship repair (1992-present) Turbine engine manufacturing & repair (1990-1995)	Ship repair (1981-present)
	Bay 2			Industrial cleaning & environmental response (1989-1992) Paint supplier (1991-1995) Painting & sandblasting (1990-2005) Ship repair (1990-present)	Painting & sandblasting (1990-2005) Ship repair (1990-present)
	76	Storage platforms (~1945) *Removed by 1948*			
	77	Outfitting building (~1945) Electrical equipment repair & service (1948-1952) Marine supplier (1948-1952) Roofing & painting contractors (1947-1949)	Boat lift manufacturer (1964) Boiler insulation company (1955-1983) Boiler repair (1962-1963) Electrical equipment repair & service (1948-1952) File storage (1965) Food produce storage (1952-1957) Lawn sprinkler manufacturing (1955-1961) Lift truck rentals & repair (1952-1964) Marine electronics (1961-1968) Marine supplier (1948-1952) Merchandise handling & storage (1950-1952) Metal stamping (1955-1957) Offices (1955-1957) Repair & storage of diesel equipment (1965-1968) Roofing & painting contractors (1947-1949) Ship chandlers (1959-1961) Ship repair (1952) & (1966-1968) Surplus storage (1955-1956) Thermostat manufacturing (1953-1959) Truck service (1960-1963) Vending company (1961-1964) *Demolished in 1968*		
	80	Constructed in 1944; Outfitting building #2 (~1945) Ship dismantling (1949-1951)	Engineering services (1951) Flooring company (1970) Ship dismantling (1948-1951) Ship repair companies (1960-1974) Vessel inspection (1960-1986)	Federal government (1988-1989) Industrial cleaning (1990-1993) Marine installation (1980-1987) Marine repair/industrial fabrication (1991-1993) Military (1977-1990) Non-destructive testing (1985-1989) Offices (1981-1982) & (1985) & (1992-present) Painting & sandblasting (1981-1983) & (1987-present) Ship repair companies (1977) & (1982-1990) Turbine engine manufacturing & repair (1982-1998) Vessel inspection (1960-1986)	Industrial cleaning (1998-1999) Offices (1992-present) Painting & sandblasting (1987-present) Turbine engine manufacturing & repair (1982-1998)
	Central Utility Building (CUB)			Constructed in late 1970s to house steam generating boilers	
	Ballast Water Treatment Plant		*Original plant constructed in 1973*	*Current plant constructed in 1978 and 1979*	
	605		*Constructed in late 1960s for central waste collection*		

APPENDIX B
SUMMARY OF HISTORICAL BUILDING USES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 – 1949	1949 – 1975	1976 – 1996	1996 – Present
OU2	3	Mold loft (~1945) General storage for ship dismantling (1947-1949) Warehouse (1949-1950)	Grain storage (1955-1961) Packing company (1951-1953) Warehouse (1949-1950) & (1955-1961) Lumber storage (1955) Steel fabrication (1952) *Demolished in 1961*		
	5	Oxygen house (~1945) Ship dismantling (1947-1949)	*Demolished by 1956*		
	Original Building 9	Steel supply (1947-1951)	Fork lift manufacturing (1961-1963) Industrial manufacturing (1955-1960) Machine shop (1952) Steel fabrication & supply (1947-1962) *Demolished in 1962*		
	20A	Substation (~1945)	*Removed by PGE in 1968*		
	21	Boiler erection building (~1945) Sawmill equipment manufacturing (1947-1953)	Sawmill equipment manufacturing (1947-1953) *Removed in 1953*		
	37	Motor shed (1942) Aluminum oil tank manufacturer (1948-1951) Equipment company (1949) General contractors (1949-1954)	Aluminum oil tank manufacturer (1948-1951) General contractors (1949-1954) Shop space (1951-1957) *Demolished by 1956*		
	40	Lumber yard office (~1945) Insulation manufacturer (1947) Outside storage (1947-1960) Paint supplier (1947-1951)	Outside storage (1947-1960) Paint supplier (1947-1951) Plastic products supplier (1950) Ship repair (1952) Storage & overaul of electrical equipment (1952) *Demolished by 1956*		
OU2 (continued)	53	Salvage depot (~1945) with shop and offices Hospital equipment manufacturing (1947-1952)	Hospital equipment manufacturing (1947-1952) *Demolished by 1956*		
	56	Machine shop (~1942?) Electrical equipment repair & storage (1948-1954)	Electrical equipment repair & storage (1948-1954) Fork lift manufacturing (1951-1963) Gear cutting and machine work (1955-1963) Industrial manufacturing (1955-1960) Steel fabrication (1953-1961) *Demolished in 1962*		
	81			*Constructed in 1986 as office space in support of module fabrication activities* Module fabrication office (1986-1990) Ship repair companies (1986-1987)	Shipyard training facility (present)
	83			General shop for ARCO (1986-1990)	
	N. Channel Fab Site		Fremont Bridge parts assembly (1970-1973) Lumber supply & sales (1955-1970)	Equipment storage and maintenance (1985-1987) General construction (1977-1979) Module fabrication (1988-1990) Repair of a Brown & Root vessel (1986) Steel fabrication (1988-1990) Vehicle parking (1995-1997)	Truck/trailer parking (2004-present) Vehicle parking (1995-1997)
OU3	23	Lunch room (~1945) Paint supplier (1947-1952)	Paint supplier (1947-1952) *Demolished by 1953*		
	70			*Constructed in 1980 as an office and staging area for environmental response companies*	*Office and staging area for spill response companies*

Note: Shaded cells indicate building not present during that period.

Appendix C

Appendix C

Summary of Historical Building Occupants

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1	4	Evergreen Chemical & Soap Co. (1949-1950) John L. Hudson Co. (1949-1950) – outside space west of building	Cattal Bros. Forest Products (1960-1963) - space adjacent to building Coast Marine Equipment Company (1956) Coastal Coatings (1991-1993) - offices Columbia Supply Co. (Mar 1957) Electro-Mechanical Co. (Mar 1957) Evergreen Chemical & Soap Co. (1949-1950) Industrial Refrigeration & Equipment Co. (1950-1958) - carpenter shop John L. Hudson Co. (1949-1950) – outside space west of building Matthews Marine Hydraulic (1967-1974) Olympia Stone Company (1964) Park Loading Company (1952) - outside area northwest of building Ramona Towboat Company (1962-1965) Reinholdt & Lewis (1952) - outside space adjacent to building Swan Island Marine Supply Company (1959-1962) Watco Electric Company (1958)	Boston Metals Company (1984) - shop space Corrosion Management, Inc. (1993-1995) – trailer next to building Lockport Marine (1986-1987) - offices	
	Annex			CAA Northwest, Inc. (Aug 1994) Certified Asbestos Abaters, Inc. (1994-1995) Donald Hudson (1984-present) John Murdoch (1981-1991) - downstairs Lockport Marine Company (1985-1987) – Area E Mar Com, Inc. (1994-1995) – Office in northwest corner of Bay 1 Marine Vacuum Service, Inc. (1993-1995) - Office, shop and parking lot at northeast end of bay Norvac Services, Inc. (1987) Pacific Coast Environmental, Inc. (1991-1993) - Office Pacord, Inc. (1987-1989) & (1991-1992) Thermal Services, Inc. (1994-1999) Tom Maples & Associates (1991-1993) Western Boiler & Mechanical, Inc. (1992-1993) Office and shop space Westest, Inc. (1991-1993)	Columbia Wire & Iron Works (2000-present) Donald Hudson (1984-present)
	Bay 1	Columbia Supply Co. (1948-1957) and (1948-1950 in Bay 1A)	Columbia Supply Co. (1948-1957) Electro-Mechanical Company (1955-1973) Lawrence Warehouse Co. (1954-1957)	Cascade General (1987-1991) - outside space across from bay Dillingham Ship Repair (1986-1987) - outside space across from bay Lockport Marine (1985-1987) Oregon Steel Mills, Inc. (Jul 1995 to Aug 1995) PSEA, Inc. (1980-1986) Wellons, Inc. (Feb to Jul 1995) West State, Inc. (1987-1993)	Columbia Wire & Iron (1998-present) Thermal Services, Inc. (present)
	Bay 2	Columbia Supply Co. (1948-1957)	Columbia Supply Co. (1948-1957) Lawrence Warehouse Co. (1954-1957) Northwest Copper Works (1974-1974) Northwest Marine Iron Works (1974-1993) Pointer-Willamette Trailer Co., Inc. (1972-1973) Thompson Metal Fabricators (1958-1971)	American Fabricators dba Harris Thermal Transfer Products (1994-1995) Brown & Root (1984-1988) Cascade General (1987-1991) - outside space across from bay Dillingham Ship Repair (1986-1987) - outside space across from bay Lockport Marine (1985-1988) Nordic Well Servicing (1984) Northwest Marine Iron Works (1974-1993) West State, Inc. (1990-1994) - Shop	Columbia Wire & Iron (2000-present) Tyco Submarine Systems Ltd. (1997-present)

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	Bay 3		Albina Engine & Machine (1951-1972) Fentron Highway Products (1971-1979) Kerr Grain Corporation (1958-1963) Northwest Marine Iron Works (1979-1991) Willamette Iron & Steel Company (1953-1982) Woodbury Steel (Aug 1966)	Brown & Root (1984-1988) Dillingham Ship Repair (1987-1988) - outside space across from bay Fentron Highway Products (1971-1979) Marine Propulsion Services (1986-1998) Northwest Marine Iron Works (1979-1991)	Marine Propulsion Services (1986-1998)
	Bay 4	Columbia Supply Co. (1948-1957)	Columbia Supply Co. (1948-1957) Fentron Highway Products (1970-1979) Kerr Grain Corporation (1958-1963) Lawrence Warehouse Co. (1954-1957) Northwest Marine Iron Works (1969) Woodbury Steel (Aug 1966)	Brown & Root (1984-1988) Cascade General, Inc. (1989) Fentron Highway Products (1970-1979) Northwest Marine Iron Works (1979-1988) Oregon Iron Works, Inc. (1992-1995) Zarcon Corporation (1987)	Columbia Wire & Iron (2000-present)
	Bay 5	Columbia Supply Co. (1948-1957)	Columbia Supply Co. (1948-1957) Fentron Highway Products Company (1970-1979) Kerr Grain Corporation (1958-1963) Lawrence Warehouse Co. (1954-1957) Park Loading Company (1953) - outside space adjacent to bay Woodbury & Company (1950-1974) Woodbury Steel (Aug 1966)	Arco Alaska (Dec 1987) Brown & Root (1984-1988) Fentron Highway Products Company (1970-1979) Lockport Marine Company (1985-1988) Northwest Marine Iron Works (1979-1983) Oregon Iron Works, Inc. (Jul 1995 to Dec 1995)	
	Bay 6	Columbia Supply Co. (1948-1957)	Columbia Supply Co. (1948-1957) FMC Corporation (1974-1986) Lawrence Warehouse Co. (1954-1957) Kerr Grain Corporation (1958-1963) Fentron Highway Products Company (1971) Northwest Marine Iron Works (1965-1971) & (1978-1982) Olympian Stone Company (1964-1965) Park Loading Company (1952-1959) - bay and adjacent outside area	Brown & Root (1984-1988) Cascade General, Inc. (1990-1991) Cascade General, Inc. (1987-1991) - outside space across from bay Dillingham Ship Repair (1986-1987) - outside area near bay Northwest Marine Iron Works (1978-1982)	
	Bay 7	Columbia Supply Co. (1948-1957) Darrel M. Gibson Company (1948-1951)	Columbia Supply Co. (1948-1957) Darrel M. Gibson Company (1948-1951) Guy F. Atkinson (1952) Lawrence Warehouse Co. (1954-1957) Keystone Shipping (1975) Kerr Grain Corporation (1958-1963) Northwest Marine Iron Works (1965-1971) & (1974-1978) Progress Electronics Company of Oregon (1961-1985) Thompson Metal Fabricators (1958)	Cascade General, Inc. (1986-1988) Dillingham Ship Repair (1983) Northwest Copper Works (1982) Northwest Marine Iron Works (1974-1979)	
	Bay 8	Columbia Supply Co. (1948-1957) D.M. Gibson Company - (1948-1951) WAA and Federal Works Administration (Sep 1948)	Columbia Supply Co. (1948-1957) D.M. Gibson Company - (1948-1951) Fentron Highway Products (1970-1980) Freightliner (1965-1970) Kerr Grain Corporation (1958-1963) Lawrence Warehouse Co. (1954-1957) Northwest Marine Iron Works (1971-1982) Pacific Diesel Power Company (1964-1972) Portland Wire & Iron (Feb to Nov 1971) Soule Steel Company (1952)	Cascade General, Inc. (1987-1988) Dillingham Ship Repair (1982-1987) Fentron Highway Products (1970-1980) Northwest Marine Iron Works (1971-1982)	
	Bay 9	Columbia Supply Co. (1948-1957) Consumers Materials, Inc. (1949-1950) M.D. Hicklin (1948-1951)	Albina Engine & Machine (1964 & 1966-1975) Columbia Supply Co. (1948-1957) Dillingham Ship Repair (1970-1987) Consumers Materials, Inc. (1949-1950) E.V. Prentice Dryer Co. (aka E.V. Prentice Co. & Prentice Machine Works) (1960-1970) Kerr Grain Corporation (1958-1963) Lawrence Warehouse Co. (1954-1957) M.D. Hicklin (1948-1951)	Cascade General, Inc. (1987-1995) Dillingham Ship Repair (1970-1987) West State, Inc. (1990-1994) - yard space near bay	

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	Bay 10	Gilmore Steel Co. (1948-1950) Columbia Supply Co. (1948-1957)	Albina Engine & Machine (1952-1963) Columbia Factors (1969-1970) Columbia Supply Co. (1948-1957) E.V. Prentice Dryer Co. (aka E.V. Prentice Co. & Prentice Machine Works) (1960-1970) Fentron Highway Products (1970-1978) Gilmore Steel & Supply Co. (1947-1951) Kerr Grain Corporation (1958-1963) Lawrence Warehouse Co. (1954-1957) P & F Manufacturing Company (1968-1969) Sea-Land Service (1963-1974) Soule Steel Company (1952) Thompson Metal Fabricators (1971-1977)	Cascade General, Inc. (1987-1988) Dillingham Ship Repair (1978-1987) Fentron Highway Products (1970-1978) Thompson Metal Fabricators (1971-1977) West State, Inc. (1990-1994) - yard space near bay	
	Bay 11	Columbia Supply Co. (1948-1957) Gilmore Steel Co. (1948-1950)	Columbia Supply Co. (1948-1957) Gilmore Steel & Supply Co. (1947-1951) Kerr Grain Corporation (1958-1963) Lawrence Warehouse Co. (1954-1957) Northwest Marine Iron Works (1963) P & F Manufacturing Company (1968-1969) Reinholdt & Lewis (1951-1952) Thompson Metal Fabricators (1964-1977)	Cascade General, Inc. (1988) Corrosion Management, Inc. (1993-1995) - building & adjacent area for trailer Dillingham Ship Repair (1978-1987) Thompson Metal Fabricators (1964-1977) West State, Inc. (1990-1994) - yard space near bay	
	Original Building 6 *(Located adjacent & west of Building 4)*	Consolidated Builders, Inc. (Sep 1948) Ireland Industries, Inc. (1947-1950)	Ireland Industries, Inc. (1947-1950) Johnston Propeller Works (1955-1958) Kerr Grain Corporation (1959-1960) Mar-Dustrial Sales & Service (aka Mar-Dustrial Sales, Inc.) (1951-1960) Marine Electric Co. (1955-1957) Northwest Technical Institute (1953)	[redacted]	[redacted]
	New Building 6 *(Located near Berth 305)*	[redacted]	[redacted]	Steelhead Construction Inc. (1984-present)	Steelhead Construction Inc. (1984-present)
	7	Civil Air Patrol (1949-1952) Consolidated Builders, Inc. (1948-1949) Department of the Navy – permit (1949-1950) Western Enterprise, Inc. (1948)	General Services Administration (1954-1955) - basement Kaiser-Frazer Sales Corp. (1950-1951) Civil Air Patrol (1949-1952) - basement Port of Portland (Mar 1957) R.S. Brewer & Donald Hudson (1962-1963) Western Farmers Association (1959-1961) - basement	[redacted]	[redacted]
	8	Department of the Navy – permit (1949-1950)	Park Loading Company (1952) - outside space adjacent to building Port of Portland (Mar 1957)	[redacted]	[redacted]
	New Building 9 *(constructed in ~1965 and called Pacific Marine Building or Building 64 until late 1980s when it was renamed Building 9)*	[redacted]	Pacific Abrasives (Aug 1966) – Adjacent to building Pacific Marine Service (1966-1972) Pac-Mar (1972-1974)	Cascade General, Inc. (1987-1994) – Office, shop space Crosby and Overton (1974-1980) Dillingham Ship Repair (1980-1983) Lips Propellers (1983-present)	Lips Propellers (1983-present)

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	10	Consolidated Builders, Inc. (1947-1949) Department of the Navy - permit (1949-1950) John L. Hudson Co. (1949-1953) Port of Portland (1949)	Albina Engine and Machine Works - Area 7A (1951-1952) and (1963-1968) C.H. Murphy Co. (1958-1978) Caffall Bros. Forest Products (1960-1963) Coast Engine & Equipment Corp. (Aug 1966) Columbia Asbestos Company (1963-1970) Department of the Navy (1949-1950) & (1961-1963) E.J. Bartells (1950-1977) Ehrlich's Business Service (1950-1951) Electro-Mechanical Co. (1955-1973) Fish Commission of Oregon (1951-1957) Fraser Boiler Service (1961-1963) Haines Enterprises (1952-1963) Hoffman Construction (1974-1983) Industrial Refrigeration & Equipment Co. (1950-1958) John L. Hudson Co. (1949-1953) Keystone Shipping (1968-1975) King Engineering (1961) L.J. Hoffman (1950-1963) Lockwood Wood Products (1950-1952) Mac's Steam Cleaning (May to Jul 1963) Mar-Dustrial Sales & Service (aka Mar-Dustrial Sales, Inc.) (1951-1960) Marine Electric Company (1951-1963) Misco Services (1957-1959) Northwest Marine Iron Works (1958-1991) - shops, paint shop, offices, warehouse Northwest Ordnance Company (1961-1963) Oscar Tussell – doors 5 & 6 (1951) Pacific Marine Service (1950-1966) – Office, tool room & nearby sandblast shed Pacific Ordnance & Electronics Co. (1962-1965) *Pacific Riggers (1955-1957)* Port of Portland (1957-1966) – electrical shop States Steamship Company (1950) West Coast Wire & Cable (1955-1957) Willamette Iron & Steel Company (1951-1960)	Allwaste Asbestos Abatement (1991) American Bureau of Shipping (1984-1995) – SW side downstairs Bailey Controls Co. (1985) Brown & Root (1984-1988) C.H. Murphy Co. (1958-1978) Cascade General (1990-1995) - Bays 2 & 3 Cavi-Tech (1992-1996) – Suite C Certified Asbestos Abaters (1994-1995) Coastal Coatings, Inc. (1984-1985 & 1987-1991) Columbia I & S, Inc. (1985-1986) Don Merritt (1991-1994) – Upstairs E.J. Bartells (1950-1977) Farr West Marine, Inc. (1985-1998) – upstairs Fraser Boiler & Diesel (1988-1996) – SE corner, downstairs and Shops 4 and 5 Gary J. Strait (dba Ronald Nisbet Associates) (1992-1995) Global Incorporated (Feb to Aug 1995), Shop 1 Goodall Rubber Company (1990) Government Services Administration (1990-1993) – downstairs HazMat Solutions, Inc. (1994-1996) Hoffman Construction (1974-1983) I.A.M. Environmental (formerly Allwaste Asbestos Abatement) (1991-1996) - downstairs Jigg's Floors, Inc. (1982-1995) – NE corner, downstairs John Murdoch (1991-2005) – upstairs Lockport Marine (subsidiary of Lockheed Shipbuilding Company) (1985-1987) M.M.P. Quality Inspections, Inc. (1991-1992) – Suite C downstairs Mar Com, Inc. (1994-1995) – Bays 1-3 *Marine Propulsion Services (1986-1998)* Navi-Tech, Inc. (~1980s) North American Trading Company (1983-1989) Northwest Envirocon, Inc. (aka Global, Inc.) (1994-2005) – Shop Northwest Marine Iron Works (1958-1991) - shops, paint shop, offices, warehouse Northwest Vacuum Truck Services (1985-1986) Norvac Services, Inc. (1986-1989) Pacific Coast Environmental (1989-1990) Pacific Detroit Diesel, Inc. (1995-1996) Pacord, Inc. (1985-1987) Portland Associates for SEA Services (1991-1995) – Upstairs Portland Shipyard Training Center, Inc. (Feb to Aug 1995) Propulsion Controls Engineering (1992-1993) - Ground Floor R.E.H., Inc. (1991-1993) – Shop area Ronald Nisbet Associates (1989-present) Thermal Services, Inc. (1999-present) U.S. Coast Guard (1990-present) – NW corner, downstairs W.H. Padie Associates (1993) Walashek Industries (1990-present) – Office Suite A and Shop 3 West State, Inc. (1989-1991) – Office and shop space	Donald R. Hudson (1962-2005) Marine Propulsion Services (1986-1998) Northwest Envirocon, Inc. (aka Global, Inc.) (1994-2005) Ronald Nisbet Associates (1989-present) U.S. Coast Guard (1990-present) – NW corner, downstairs Farr West Marine, Inc. (1985-1998) – upstairs Fraser Boiler & Diesel (1988-1996) – SE corner, downstairs and Shops 4 and 5 John Murdoch (1991-2005) – upstairs Thermal Services, Inc. (1999-present) Walashek Industries (1990-present) – Office Suite A and Shop 3

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	10 (continued)			W&O Supply (1986) Zarcon Corporation (1986-1987)	
	12	Anderson and Forrest (Sept 1948) Andresen Forest Products Co. Inc. (1947-1949) Stylebuilders (1949)	Diesel Training, Inc. (1949-1951) Electric Controls, Inc. (1952) H.K. Equipment Company (1955) Industrial Refrigeration & Equipment Co. (1950-1958) Northwest Furniture Express (1951-1952) Pacific Ordnance & Electronics Co. (1961) Park Loading Company (1952) - outside space adjacent to building Stylebuilders (1949) Tractor Training Service (1950-1951)		
	20B	Not applicable			
	29	Not applicable			
	30 *(Way End Buildings Nos. 30-1 through 30-8)*	AAAA Fire Extinguisher Co. (1947-1950) - #30-6-8 Columbia Construction Company (1948-1950) – #30-6 Consolidated Builders, Inc. (1947-1949) - #30-1 Evergreen Chemical Co. (1947-1950) - #30-3-4 James L. Linn (1948-1950) - #30-5 Paramount Advertising & Printing Company - (aka Paramount Printing Company) (1947-1950) - #30-2 Perfect Products Co. (1947-1950) - #30-2 Portland General Electric (1949) - #30-3 Seaboard Sales Book Company (1949-1950) #30-3 & 30-7 Western Enterprise (1948) - #30-3	AAAA Fire Extinguisher Co. (1947-1950) - #30-6-8 Albina Engine & Machine Works (1951) Atkinson (1952) - #30-5 Columbia Construction Company (1948-1950) – #30-6 Graslee (1952) #30-6 James L. Linn (1948-1950) - #30-5 Paramount Advertising & Printing Company - (aka Paramount Printing Company) (1947-1950) - #30-2 Portland General Electric (1949) - #30-3 Perfect Products Co. (1947-1950) - #30-2 Seaboard Sales Book Company (1949-1950) #30-3 & 30-7 Tom Benson Glass (1951-1952) - #30-8		
	31A	Electric Controls, Inc. (1948-1952) - #31A	Electric Controls, Inc. (1948-1952) - #31A		
	31B	Evergreen Chemical & Soap Co. (1947-1950) - #31B	Evergreen Chemical & Soap Co. (1947-1950) - #31B		
	35	Consolidated Builders, Inc. (Sep 1948) Luhin & Heysell (1947)	Albina Engine & Machine Works (1961-1966) J.D. Sampson Contracting Company (1951-1961)		
	38	Barton-Haynes (1947-1948) Johnston Propeller Works (1947-1954)	Johnston Propeller Works (1947-1954)		
	43	Consolidated Builders, Inc. (1947-1948)	A.F. Ehrlich (1950-1954) Fraser Boiler & Diesel (1961-1995) Northwest Marine Iron Works (1960-1982)	AMSCO Refrigeration, Inc. (1987-1995) Corrosion Management, Inc. (1993-1995) Fraser Boiler & Diesel (1961-1995) Dillingham Ship Repair (1984-1985) - Upper office Northwest Marine Iron Works (1960-1982) Northwest Vacuum Truck Services (1983) West State, Inc. (1987-1992) Western States Leasing, Inc. (1987-1992)	International Inspection (1998)
	50		Albina Engine & Machine Works (1953-1975) Department of the Navy (1963-1982) Donald R. Hudson (1967-1973) Hudson & Lind (1963-1967) Northwest Marine Iron Works (1953-1961) - Bay 1 Northwest Marine Iron Works (1963-1970) - Bay 4 Northwest Marine Iron Works (1963-1969) - Bays 3 & 5 Pacific Marine Service (1963-1965) Port of Portland (Aug 1966) – Lunch room R.S. Brewer (1963-1967) U.S. Coast Guard (1963-1968) Willamette Iron & Steel Company (1953-1968)	Cascade General, Inc. (1987-1991) – Bay 3 Department of the Navy (1963-1982) Dillingham Ship Repair (1977-1981) - Bay 1 Dillingham Ship Repair (1982) - Bay 2 Dillingham Ship Repair (1977-1987) - Bays 3 & 4 Donald R. Hudson (1967-1973) Lips Propellers (1987-2005) – Yard space south of Bay 3 Marine Propulsion Services (1986-present) – Bays 2 & 4, yard space for blast shed Port of Portland (1991-1995) – upstairs	Marine Propulsion Services (1986-present) – Bays 2 & 4, yard space for blast shed

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SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	54		Albina Engine & Machine Works (1960-1971) Northwest Marine Iron Works (1960) Northwest Marine Iron Works (1970-1982) - Bay 4 Northwest Marine Iron Works (1970-1989) - Bay 3 Willamette Iron & Steel Company (1960)	Dillingham Ship Repair (1977-1987) - Bay 2 Lips Propellers (1987-2005) – trailer by building Northwest Marine Iron Works (1982-1989) - Bays 1 & 5 Northwest Marine Iron Works (1970-1989) - Bay 3 Northwest Marine Iron Works (1970-1982) - Bay 4	Lips Propellers (1987-2005) – trailer by building
	58			Doran Company (1975-1983) - yard space near building	Cascade General, Inc. (1996-present)
	60		Albina Engine & Machine Works (1967-1974)	Doran Company (1975-1983) - yard space near building	Cascade General (1996-present)
	61		Port of Portland (1952-1995)	Port of Portland (1952-1995)	Cascade General (1996-present)
	62				
	63		Albina Engine & Machine Works (1966-1978) Duane Peabody Company (1961-1963)	Cascade General, Inc. (1987-1995) Dillingham Ship Repair (1978-1987) Duane Peabody Company (1961-1963)	
	63A		Albina Engine & Machine Works (1971-1975)	Cascade General, Inc. (1987-1994) Dillingham Ship Repair (1981-1987)	
	64 *(called Building 64 until late 1980s when it was renamed Building 9 -- see also* *'New Building 9' above*		Pacific Abrasives (Aug 1966) – Adjacent to building Pacific Marine Service (1966-1972)	Cascade General, Inc. (1987-1994) – Office, shop space Crosby and Overton (1978-1979) Dillingham Ship Repair (1987) Lips Propellers (1983-present) - building & outside space Northwest Vacuum Truck Services (1983-1986) Norvac (1985-1992)	Lips Propellers (1983-present) - building & outside space
	71			Blasco, Inc. (1989-1991) Cascade General, Inc. (1988-1995) Dillingham Ship Repair (1980-1987)	
	72			Cascade General (1995) Columbia I & S, Inc. (1981-1986) - Bay 6 Dillingham Ship Repair (1988-1987) - Bays 5 & 6 E.J. Bartells (1981-1993) – Bay 6 Hempel's Marine Paint (Oct 1985) Lockport Marine (1986-1987) – Bay 3 Northwest Marine Iron Works (1982-1986) - Bay 5 W&O Supply (1982-1995) – SW corner, Bay 1 West State, Inc. (1986-1994) – Upstairs and Bays 2, 3, 4, 5 and 6 Western Boiler & Mechanical, Inc. (1992-1993) Zarcon (1986-1987) – Bay 2	American Bureau of Shipping (Present)
	73			Burlington Environmental - Bay 2 (1989-1992) Cascade General, Inc. (1990) - Bay 2 Cascade General, Inc. (1993-1995) - Bay 1 Cavi-Tech (1992-1995) – Bay 1 Chemical Processors (ChemPro) (1989-1990) - Bay 2 CLN, Inc. (1987) Crosby and Overton (1981-1989) – shop/office Diamond K (1991-1995) – Yard space east of building and Bay 2 In-Mar Sales, Inc. (1991-1995) – yard space on south side of building and Bay 2 International Marine and Industrial Applicators - (Mar 1991 to Jul 1991) - Yard space east of Bay 1 Marine Propulsion Services (1990-1995) – yard space adjacent to building Northwest Marine, Inc. (1981-1993) – Bay 1 Southwest Marine (1993) – Bay 1 West State, Inc. (1992-1994) – yard space adjacent to building	

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	76	Not applicable			
	77	G.I. Merchandise Mart (1949-1950) General Electric Company (1948-1952) Gillen-Cole & Co. (1947-1949) - building & open storage north of building Standard Marine Supply, Inc. (1948-1951)	Acme Produce (1952-1957) Albina Engine & Machine Works (1952) Beagle's Merchandise Mart (1951-1952) Bourne Air Lift - 1st Floor (1960-1963) C.D. Hoekstra (1964) C.H. Murphy Company (1959-1961) City Metal Manufacturing Co. (1956-1957) City Metal Stamping Works (1955) Coast Engine & Equipment Corp. (1965-1968) Coffee Time Mfg. Co. (may also be Coffee-Time Vending Co.) (1961-1964) Dodd & Evans Co. (operating as Clark Industrial Truck Rentals) (1952-1953) Douglas-Guardian Warehouse Corporation (1950) Electric Controls, Inc. (1953-1957) Electric Controls Manufacturing Company (1957-1959) Electro Controls, Inc. (1955) Fraser Boiler Service (1962-1963) Freightliner (1965) - 2nd floor G.I. Merchandise Mart (1949-1950) General Electric Company (1948-1952) Lift Truck Sales & Service Co. (aka Lift Truck Sales Co.) (1957-1964) - 1st floor Industrial Truck & Equipment Co. (1953-1956) Ivan Mundhenke (1961-1964) J.T. Thorpe Northwest Inc. (aka J.T. Thorpe & Son, Inc. and J.T. Thorpe Co.) (1955-1963) - 1st floor M & C Sales Co. (1955-1956) M.J. Beagle (1951) Mears Electric Controls (1957-1959) Northwest Marine Iron Works (1967-1968) Progress Electronics Company of Oregon (1961-1968) R. Bruce Doane (1961-1962) - 1st floor S & P Enterprises, Inc. (1964) Standard Marine Supply, Inc. (1948-1952) Stigum-Tweetan Co.(1961) Tom Stigum (1961-1963) Victor Miller (1955-1957) Willamette Iron & Steel Company (1966-1968) Woodlawn Sprinkler Co. (1955-1961) - 1st floor		

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU1 (continued)	80	Consolidated Builders, Inc. (1948-1949) U.S. Maritime Commission (1942-1951)	Albina Engine & Machine Works (1960-1974) American Bureau of Shipping (1960-1986) American Marine Service (Mar 1963) Compo Floors, Inc. (1970) F.R. Harris Company (1951) - 2nd floor Floating Marine Ways (1965-1974) Port of Portland (Aug 1967) U.S. Maritime Commission (1942-1951)	Allstate Industrial and Marine Cleaning - (1990-1993) – downstairs American Bureau of Shipping (1960-1986) Blasco, Inc. (1989-1992) – Office C & C Sandblasting Company (1981-1983) Cascade General, Inc. (1988) – Office space Coastal Coatings (1985) Department of the Navy (1982-1985) Diamond K (1990-present) – downstairs Dillingham Ship Repair (1977) Government Services Adminstration (1988-1989) HAZCON, Inc. (1992-1993) – Room 110 Kimco (1987-1989) L & S Marine (1984-1990) Lincoln-Cristi, Inc. (Apr 1993) – Room 112 Marine Propulsion Services, Inc. 1982-1998) – southeast corner, shop, yard space Marine Ways Corp. (1982-1986) Northwest Marine Iron Works (1977) Pacific Coast Environmental (1988-1990) Pacific Dynamics Corporation (1994-present) – 1st floor office Performance Contracting (Marine Division) (1980-1987) Precision Analytics (1988) Ronald Nisbet Associates (1985-1989) Schnitzer-Levin Marine Co. (1981-1982) SIPCO (1988-1989) West State, Inc. (1991-1993) – upstairs U.S. Coast Guard (1977-1990) – bottom floor	Diamond K (1990-present) – downstairs Industrial Marine Cleaners (1998-1999) Marine Propulsion Services, Inc. (1982-1998) Ronald Nisbit Associates (1987-present) Pacific Dynamics Corporation (1994-present) – 1st floor office West Coast Marine Cleaning (1999) – office and yard space
	BWTP	[redacted]	[redacted]	Allstate Industrial & Marine Cleaning, Inc. (1991-1993) Cascade General (1991-present) Cascade General, Inc. (1991) Chempro (1991-1993) Foss Environmental Services, Inc. (1991) Knappton Corp. (1991) Lockwood Industries, Inc. (1991-1993) Northwest Field Services (1986-1994) Northwest Marine Iron Works (1991) Pacific Coast Environmental, Inc. (1991-1993) Port of Astoria (1991) Riedel Environmental Services, Inc. (1991) Shaver Transportation (1991) Spencer Environmental Services, Inc. (1991-1993) Sundial Marine (1991) Tidewater Barge Lines (1991) West Coast Marine Cleaning (1990-1996) West State, Inc. (1991)	Cascade General (1991-present)

APPENDIX C
SUMMARY OF HISTORICAL BUILDING OCCUPANTS
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
	Outside Areas	Consolidated Builders, Inc. (1947-1949) - dry dock basin & outfitting dock Marine Air Service (1948-1950) - open area on lagoon	Cascade Racing (1961) - Lagoon Devine & Zimmerman Diving Co. (1950) - ferry slip and dolphins Marine Air Service (1948-1950) - open area on lagoon Northwest Marine Iron Works (1951-1993) - Outside space near Berth 306 Park Loading Company (1952) - outside space between gantry tracks 5 & 7 and 7 & 9 Zidell Explorations (1962-1973) - old Navy pier in lagoon	Acuturus Shipping (1990-1995) - Lay Berths American Petrofina (1990-1995) - Lay Berths Cascade General (1987-1988) - outside spaces near paint storage, sandblast/hopper ramp area, Berth 312 lunch room, and near BWTP Cascade General (1987-1991) - outside spaces near Berth 314 Lunch Room, sandblast building & CUB Cavi-Tech (1992-1995) – yard space Dillingham Ship Repair (1987-1988) - outside spaces near paint storage, sandblast hopper / ramp area, nurses station, Berth 312 lunch room, Berth 314 lunch room, and near BWTP Foss Environmental Services, Inc. (1992-2002) - small boat basin Kleen Blast (Aug 1995) - Berth 305 & outside area Lockport Marine (1986) - Berth 305 Lockport Marine (1986-1988) - outside space near Berths 313 & 314 Marine Propulsion Services, Inc. (1986-1998) - Berth 302 and yard space Northwest Marine Iron Works (1951-1993) - Berth 305 & outside space near Berth 306	Foss Environmental Services, Inc. (1992-2002) - small boat basin Marine Propulsion Services, Inc. (1986-1998) - Berth 302 and yard space Tyco Submarine Systems, Ltd. (1998-present) - Berth 305
OU2	3 *(demolished in 1961)*	Consolidated Builders, Inc. (1947-1949) War Assets Administration (Sep 1948) Westinghouse Electric Corporation (1949-1950) - Ground Floor	California Packing Corp. (1951-1953) California Packing Company (1951-1953) Lawrence Warehouse Co. (1955-1961) Park Loading Company (1952-1953) - outside space between building and railroad tracks Timber Tech Corporation (1955) Westinghouse Electric Corporation (1949-1950) Ground Floor		
	5 *(demolished by 1956)*	Consolidated Builders, Inc. (1947-1948)			
	Original Building 9 *(demolished in 1962)*	Gilmore Steel Co. (1947-1951)	Fought & Co. Inc. (1956-1962) Fought & Gray (1951-1955) Gilmore Steel Co. (1947-1951) McCoy Industries (1952) Pettibone Mercury Corporation (1961-1963) Transiter Truck Co. (1955-1960)		
	20A	Not applicable			
	21	Ellerman Sawmill Manufacturing Co. (aka Chas. Ellerman) (1950-1953) Industrial Products, Inc. (1947-1951)	Ellerman Sawmill Manufacturing Co. (aka Chas. Ellerman) (1950-1953) Industrial Products, Inc. (1947-1951)		
	37	L.W. Case, K.C. Steinburg and M.C. Stephens (1948-1951) Helfrich Equipment Company (1948) Morrison-Knudson Construction Co. (1949-1954) - Central portion, Propulsion Equipment Shed	Fish Commission of Oregon (1951-1956) Morrison-Knudson Construction Co. (1949-1954) - Central portion, Propulsion Equipment Shed		
	40	Mar-Dustrial Sales & Service, Inc. (aka Mar-Dustrial Sales, Inc.) (1947-1956) Otto Castrow Co. (1947-1948) Safeway Stores (1947-1960) - outside space adjacent to building	Albina Engine and Machine Works (1952) D.C. Fursman Company (1950) Smith & Leferdink (1950-1951) - outside space adjacent to building Mackey Miller and Eastman (1952) Mar-Dustrial Sales & Service, Inc. (aka Mar-Dustrial Sales, Inc.) (1947-1956) Safeway Stores (1947-1960) - outside space adjacent to building		
	53	National Appliance Co. (1947-1952) Safeway Stores (1947-1960) - outside space adjacent to building	National Appliance Co. (1947-1952) Safeway Stores (1947-1960) - outside space adjacent to building Smith & Leferdink (1950-1951) - outside space adjacent to building		

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SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Operable Unit	Building	1942 - 1949	1949 - 1975	1976 - 1996	1996 - Present
OU2 (continued)	56	General Electric Company (1948-1954)	Fought & Company Inc. (1958-1961) General Electric Company (1948-1954) Joseph M. Fought (1953-1958) Pettibone Mercury Corporation (1961-1963) Premier Gear & Machine Works (1955-1963) - Outside space near building Transiter Truck Company (1955-1960)		
	81			ARCO Alaska, Inc. (1986-1990) Commercial Office Machines (1990-1991) Dillingham Ship Repair (1987) West State, Inc. (1987)	Vacant
	83			ARCO Alaska, Inc. (1986-1990)	
	N. Channel Fab Site		Contractor's Lumber Supply (1955) Freightliner Sales & Service (1969) Murphy Pacific (1970-1973) Surplus Lumber Sales (1955-1970)	ARCO Alaska, Inc. (1986-1990) DSU Peterbilt (1995-1997) Fought & Company (1988-1990) GMC (1995-1997) Lampson Universal Rigging (1987-1990) Neil F. Lampson Co. (1986) Peter Kiewit Construction (1977-1979) Wright Schuchart Company (1990)	DSU Peterbilt (1995-1997) Freightliner (2004-present) GMC (1995-1997) PSY LLC (present) - open area northwest of N. Channel Fab area
OU3	23	Mar-Dustrial Sales & Service, Inc. (aka Mar-Dustrial Sales, Inc.) (1947-1974)	Mar-Dustrial Sales & Service, Inc. (aka Mar-Dustrial Sales, Inc.) (1947-1974)		
	70			Burlington Environmental (1989-1992) Chemical Processors, Inc. (1989-1992) Crosby and Overton (1979-1989) Foss Environmental Services (1992-2002)	Foss Environmental Services (1992-2002) Freightliner (2005-present)

Note: Shaded cells indicate building not present during that period.

Appendix D

Appendix D

Summary of Historical Business Operations and Activities

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APPENDIX D
SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
A.F. Ehrlic	Printers
AAAA Fire Extinguisher Co.	Fire extinguisher recharge
Aamsco Refrigeration	Refrigeration/heating business
Acme Produce Company	Food produce company
Acturus Shipping	Shipping company
Albina Engine & Machine Works	Ship repair
Allstate Industrial & Marine Cleaning, Inc.	Tank cleaning & disposal
Allwaste Asbestos Abatement	Asbestos abatement
American Bureau of Shipping (also known as ABS Group of Companies)	Vessel inspection
American Fabricators dba Harris Thermal Transfer Products	Industrial fabrication for the manufacture of heat exchangers and tanks; storage of materials, supplies and equipment
American Marine Service	Ship repair
American Petrofina	Vessel lay up
AMSCO Refrigeration, Inc.	Refrigeration/heating business
Anderson and Forrest	Manufacturer of wood novelties, cabinets and bars
Andresen Forest Products Co. Inc. (may be known as Andresen-Forest, Inc.)	Manufacturer of wood novelties, cabinets and bars
ARCO Alaska, Inc.	Module fabrication
Atkinson	Unknown
Bailey Controls	Controls & instrument panels
Barton-Haynes	Overhead crane manufacturer
Beagle's Merchandise Mart (aka M.J. Beagle and G.I. Merchandise Mart)	Merchandiser
Blasco, Inc.	Painting/sandblasting
Brown & Root	Module fabrication
Burlington Environmental	Industrial cleaning and environmental response
Butler Marion Co./Marion F. Butler	Manufacturer of metal doors, windows and steel products
C&C Sandblasting Company	Sandblasting contractor
C.D. Hoekstra	Unknown
C.E. Mitchell Company	Manufacturer of blackboards, paper products, flower pots & novelties; operated spray paint shop at Building 15A
C.H. Murphy Company	Ship chandlers
CAA Northwest Inc.	Unknown
Caffall Brothers Forest Products	Forest products, log booming
California Packing Company	Food product storage
Cascade General	Ship repair
Cascade Racing	Boat racing
Cavi-Tech	Hydroblasting contractor
Certified Asbestos Abaters	Asbestos abatement
Chemical Processors, Inc. (Chempro)	Industrial cleaning, environmental response and hazardous waste disposal
City Metal Stamping Works	Metal stamping
City Metals Manufacturing Co.	Metal stamping
Civil Air Patrol	Air patrol
CLN, Inc.	Sandblasting contractor
Coast Engine & Equipment Corp.	Repair & storage of diesel equipment
Coast Marine Equipment Company	Unknown
Coastal Coatings, Inc.	Commericial offices

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APPENDIX D
SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
Coffee Time Mfg. Co. (could be Coffee-Time Vending Co.)	Unknown
Columbia Asbestos Company	Asbestos abatement
Columbia Construction Co.	Warehouse
Columbia Factors	Steel fabrication for structural purposes and industrial equipment for assemblage
Columbia I & S, Inc.	Boiler repair
Columbia Supply Co.	Marine equipment (bolts; vales, electrical cable)
Columbia Wire & Iron	Steel fabrication
Compo Floors Inc.	Unknown
Consolidated Builders, Inc.	Ship dismantling
Consumers Materials, Inc.	Unknown
Contractor's Lumber Supply	Retail lumber sales
Corrosion Management, Inc.	Ship repair - painting & sandblasting
Crosby & Overton	Industrial cleaning, environmental response and hazardous waste disposal
D.C. Fursman Company	Storage and disrtibution of plastic products
Darrel M. Gibson Co. (aka D.M. Gibson Co.)	Surplus property dealer
Devine & Zimmerman Diving Co.	Diving and salvage company
Diamond K	Painting & sandblasting contractor
Diesel Training, Inc.	Unknown
Dillingham Marine & Mfg Company	Ship repair
Dillingham Ship Repair	Ship repair
Dodd & Evans Co. (operating as Clark Industrial Truck Rentals)	Equipment repair
Don Merritt	Commericial offices
Donald R. Hudson	Marine architect
Douglas-Guardian Warehouse Corporation	Warehouse operator
DSU Peterbilt	Truck manufacturer
Duane Peabody Company	Ship chandlers
E.J. Bartells Co.	Insulation manufacturing
E.V. Prentice Dryer Co. (aka E.V. Prentice Co. & Prentice Machine Works)	Plywood manufacturer
Ehrlich's Business Service	Printers
Electric Controls Manufacturing Co.	Thermostat manufacturer; electric control switch manufacturer
Electric Controls, Inc.	Thermostat manufacturer; electric control switch manufacturer
Electro-Mechanical Co.	Marine repair & supplier
Ellerman Sawmill Manufacturing Co. (Charles Ellerman)	Sawmill manufacturing
Evergreen Chemical & Soap Company	Soap and perfume manufacturer
F.R. Harris Company	Engineering services
Farr West Marine, Inc.	Marine consultant
Federal Works Administration	Governent agency
Fentron Highway Products Co.	Fabrication of stanchions, sign posts and metal service stations
Fish Commission of Oregon	Governent agency
Floating Marine Ways	Ship repair
FMC Corporation	Outfitting tankers
Foss Environmental Serivces, Inc.	Industrial cleaning & environmental response
Fought & Co., Inc.	Steel fabrication

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SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
Fought & Gray Inc.	Steel fabrication
Fraser Boiler Service	Boiler repair
Frasier Boiler & Diesel	Boiler repair
Freightliner Sales & Service	Truck manufacturer
G.I. Merchandise Mart	Merchandiser
Gary J. Strait	Non-destructive testing
General Electric Company	Electrical equipment manufacturer
General Services Administration	Govement agency
Gillen Cole Co.	Roofing and painting contractors
Gilmore Steel & Supply Co. Inc.	Steel supply and fabrication
Global Incorporated (aka Northwest Envirocon, Inc.)	Insulation manufacturing
GMC	Truck manufacturer
Goodall Rubber Company	Distributor of industrial rubber products
Government Services Administration	Vessel inspection
Graslee	Electrical repair contractor
Gunderson Brothers Engineering	Marine contractor
Gunderson, Inc.	Outfitting tankers
Guy F. Atkinson	General construction contractors
H.K. Equipment Co.	Unknown
Haines Enterprises	Commericial offices
Harris Thermal Transfer Products	Design and manufacture of heat exchangers, pressure vessels and custom industrial process equipment
Hazcon, Inc.	Commericial offices
HazMat Solutions, Inc.	Hazardous materials training and environmental consulting
Helfrich Equipment Company	Unknown
Hempel's Marine Paint	Paint supplier
Hoffman Construction	General construction contractors
Hudson & Lind	Marine architects
I.A.M. Environmental	Office and production area in support of insulator business
Industrial Marine Inc. (aka Industrial Marine Cleaners)	Tank cleaning and boiler work
Industrial Products, Inc.	Manufacture of portable sawmill equipment and dry kilns
Industrial Refrigeration & Equipment Co.	Refrigeration manufacturer
Industrial Truck & Equipment Co.	Equipment repair
In-Mar Sales, Inc.	Paint supplier
International Inspection	Non-destructive testing
International Marine & Industrial Applicators	Paint supplier
Ireland Industries, Inc.	Sandblasting and spray painting industrial equipment
J.D. Sampson Contracting Company	Boiler storage
J.T. Linn	Saw teeth manufacturer
J.T. Thorp Co.	Boiler insulation
J.T. Thorpe Northwest Inc. (aka J.T. Thorpe & Son, Inc. and J.T. Thorpe Co.)	Boiler insulation
James L. Linn (aka J.L. Linn)	Saw teeth manufacturer
Jigg's Floors, Inc.	Floor installation & repair
John C. Murdoch, Inc.	Marine surveyor
John L. Hudson Co.	Fabrication of wooden grain bins
Johnston Propeller Works	Ship repair and equipment maintenance
Joseph M. Fought	Steel fabrication

APPENDIX D
SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
K.C. Steinburg	Unknown
Kaiser Company, Inc.	Shipbuilding
Kaiser-Frazer Sales Corp.	Commericial offices
Kerr Grain Corporation	Grain supplier
Keystone Shipping	Marine shipping
Kimco	Painting & sandblasting
King Engineering	Engineering services
Kleen Blast	Ship sandblasting and painting
Knappton Corp.	Towing & lightering services
L & S Marine	Ship repair
L.D. Sturm (Sturm Elevator Company)	Vessel moorage
L.J. Hoffman	Lift truck rentals
L.W. Case	Aluminum oil tank manufacturer
Lampson Universal Rigging	Rigging company
Lawrence Warehouse Company	Grain warehousing
Lift Truck Sale Company	Lift truck rentals
Lift Truck Sales & Service Co.	Lift truck sales & repair
Lincoln-Cristi Inc.	Commericial offices
Lips Propellers	Propeller repair
Lockheed Shipbuilding Corporation	Ship repair
Lockport Marine Company (subsidiary of Lockheed Shipbuilding Company)	Ship repair
Lockwood Industries, Inc.	Industrial cleaning
Lockwood Wood Products	Sash & door manufacturer
Luhin & Heysell	Unknown
M & C Sales Co.	Surplus storage
M.C. Stephens	Unknown
M.D. Hicklin	Manufacturer of heavy equipment; concrete building manufacturer
M.M.P. Quality Inspections	Non-destructive testing
Mac's Steam Cleaning	Industrial cleaning
Mar Com, Inc.	Ship repair; industrial fabrication and machining
Mar-Dustrial Sales & Service	Ship chandlers and ship services
Mar-Dustrial Sales, Inc.	Ship chandlers and ship services
Marine Air Service	Seaplane base operator
Marine Electric Company	Marine repair
Marine Propulsion Services, Inc.	Surface preparation of turbine engines, fans and other equipment; turbine repair and manufacturing
Marine Vacuum Service, Inc.	Tank, bilge and boiler cleaning
Marine Ways Corp.	Ship repair
Matthews Marine Hydraulic	Marine manufacturing & design (marine winches, hydraulic power units and steering & engine controls)
McCoy Industries	Machine works
Misco Services, Inc.	Industrial supplies & manufacturer of machinery, tools & floating structures
Morrison-Knudsen Company	General construction contractors
Murphy Pacific Corporation	Assembling parts of Fremont Bridge
Murphy Pacific Enterprises	Assembling parts of Fremont Bridge
National Appliance Co.	Laboratory apparatus and hospital equipment manufacturer
Neil F. Lampson Co.	Ship repair

APPENDIX D
SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
North American Trading Company	Ship repair
Northwest Copper Works	Steel fabrication
Northwest Envirocon, Inc. (aka Global, Inc.)	Insulation manufacturing
Northwest Field Services	Industrial cleaning
Northwest Furniture Express	Unknown
Northwest Marine Iron Works	Ship repair & industrial fabrication
Northwest Ordnance Company	Ordnance and electronics company
Northwest Technical Institute	Training
Northwest Vacuum Truck Services	Industrial cleaning
Norvac Services, Inc.	Industrial cleaning
Olympian Stone Company, Inc.	Casting plant for exposed aggregate concrete
Oregon Iron Works, Inc.	Industrial fabrication for the manufacture of trash racks and cladding panels for use at Shasta Dam
Oregon Steel Mills, Inc.	Storage and assembly of parts for steel rolling mill expansion
Oscar Tussell	Unknown
Otto Castrow Company	Manufacture of insulation supplies
P & F Manufacturing Company	Unknown
Pacific Abrasives	Ship repair
Pacific Coast Environmental, Inc.	Marine & industrial cleaning
Pacific Diesel Power Company	Storage of diesel engines and parts
Pacific Dynamics	Tank, bilge and boiler cleaning
Pacific Marine Service	Ship repair
Pacific Marine Ship Repair	Ship repair
Pacific Ordnance & Electronics Co.	Ship repair - ordnance and electronics
Pacific Riggers	Rigging company
Pac-Mar Services	Ship repair
Pacord, Inc.	Ship repair
Paramount Advertising and Printing Co.	Advertising & printing
Paramount Printing Company	Advertising & printing
Park Loading Company	Resaw lumber and salvage materials
Perfect Products Co.	Manufacturing blackboards, paper products, flower pots and novelties
Performance Contracting, Inc. (Marine Div)	Marine installation
Peter Kiewit Construction	Construction contractors associated with construction of Fremont Bridge
Petrotek	Tank cleaning, blasting & coating
Pettibone Mercury Corporation	Manufacture of fork lifts
Pointer-Willamette Trailer Co., Inc.	Shipbuilding
Port of Astoria	Governent agency
Portland Associates for Sea Services	Assistance to military personnel
Portland General Electric	Owner of electrical equipment
Portland Shipyard LLC	Shipyard owner
Portland Shipyard Training Center	Training for welding and painting
Portland Wire & Iron	Fabrication of wire products
Premier Gear & Machine Works	Gear cutting and general machine work
Progress Electronics Company of Oregon	Marine electronics
Propulsion Controls Engineering	Engineering services
PSER, Inc.	Refrigeration contractors
R. Bruce Doane	Unknown

APPENDIX D
SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
R.E.H. Inc.	Equipment maintenance and repair of forklifts
R.S. Brewer	Marine architect
Ramona Tow Boat Company Inc.	Unknown
Reinholdt & Lewis	Unknown
Riedel Environmental Services, Inc.	Industrial cleaning, environmental response and hazardous waste disposal
Riedel International, Inc.	Ship repair
Ronald Nisbet Associates	Non-destructive testing
S & P Enterprises, Inc.	Manufacture of electric small boat lifts
Safeway Stores, Inc.	Grocer (food supplier)
Sampson Contracting Co.	Boiler storage
Schnitzer Realty	Steel supply and fabrication
Schnitzer-Levin Marine Co.	Commericial Offices
Seaboard Sales Book Company	Unknown
Sea-Land Service	Transportation company
Shaver Transportation	Towing & lightering services
SIPCO	Vessel spray painting
Smith & Leferdink	Unknown
Soule Steel Company	Steeline products
Southwest Marine	Ship repair
Spencer Environmental	Industrial cleaning, environmental response and hazardous waste disposal
Standard Marine Supply Inc.	Marine supplier
State of Oregon, Fish Commission	Govement agency
States Steamship Company	Ship chandlers
Steelhead Construction	Floating home builder
Stigum-Tweeten Co.	Unknown
Stylebuilders, Inc.	Unknown
Sun Refining and Marketing Company	Repair of SS Prince William Sound
Sundial Marine	Ship repair
Surplus Lumber Sales	Retail lumber sales
Swan Island Marine Supply Company	Marine supplier
Thermal Services, Inc.	Thermal mechanical insulation
Thompson Metal Fabricators	Metal fabrication
Tidewater Barge Lines	Towing & lightering services
Timber Tech Corporation	Lumber supply
Tom Benson Glass	Unknown
Tom Maples & Associates	Marine Consultant
Tom Stigum	Unknown
Tractor Training Service	Unknown
Transiter Truck Co.	Industrial manufacturer
Tyco Submarine Systems Ltd.	Repair of transoceanic cable equipment
U.S. Coast Guard	Vessel inspection
U.S. Navy	Military; various activities
Victor Miller	Commericial offices
W & O Supply, Inc.	Supply of valves and fittings used in ship repair, construction and conversion
W.H. Padie Associates	Commericial offices

APPENDIX D
SUMMARY OF HISTORICAL BUSINESS OPERATIONS AND ACTIVITIES
SUPPLEMENTAL AND PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Business	Operations and Activities
Walashek Industries	Machine work, welding, fitting of boiler machinery parts and boiler repair
Wellons, Inc.	Metal fabrication of heat exchangers
West Coast Marine Cleaning	Industrial cleaning, environmental response and hazardous waste disposal
West Coast Wire & Cable	Marine repair
West State, Inc.	Ship repair and industrial fabrication
Western Boiler & Mechanical, Inc.	Boiler fabrication and repair
Western Enterprise, Inc.	Pipe storage
Western Farmers Association	Commericial offices
Westest, Inc.	Non-destructive testing
Westinghouse Electric Corp.	Electrical equipment company
Willamette Iron & Steel Company	Ship repair
Woodbury & Company	Manufacture and fabrication of industrial tools and supplies, steel, and heavy hardware
Woodbury Steel	Manufacture and fabrication of industrial tools and supplies, steel, and heavy hardware
Woodlawn Sprinkler Co.	Lawn sprinkler manufacturing
Wright Schuchart Harbor Company	Construction contractors; module fabrication
WS, Inc.	Ship repair
Zarcon Corporation	Industrial sandblasting and painting contractor
Zidell Explorations, Inc.	Ship mooring

Appendix E

Appendix E

Listing of United States' Tenants Prior to 1949 Property Transfer to Port of Portland

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APPENDIX E
LISTING OF UNITED STATES' TENANTS PRIOR TO 1949 PROPERTY TRANSFER TO PORT OF PORTLAND
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Tenants with Long Term Leases	Tenants with Interim Permits
Electric Controls, Inc.	AAAA Fire Extinguisher Service
Fisheries Supply Co.	Marion Butler
General Electric Co.	Otto Castrow & Co.
D.M. Gibson Co.	Civil Air Patrol
Hyman-Michaels Co.	Columbia Construction Co.
Hyster Co.	Columbia Supply Company
Industrial Products Corp.	Consolidated Builders, Inc.
Ireland Industries, Inc.	Geo. D'Angelo dba D'Angelo & Aberle
Inglis Baking School	Evergreen Chemical & Soap Co.
Marine Air Service	Federal Works Agency
Mar-Dustrial Sales & Service	Fish Commission of Oregon
Multnomah College	G.I. Merchandise Mart
Perfect Products Co.	D.M. Gibson
Portland Dahlia Gardens	Morrison-Knudson
Portland General Electric	Detroit-Cleveland Navigation Co.
Safeway Stores, Inc.	Gilmore Steel & Supply
Seaboard Salesbook Co.	M.D. Hicklin Assigned to Consumers Materials, Inc.
Westinghouse Electric Corp.	Industrial Sheet Metals Works
Woodbury & Company	Johnson Propeller Works
Wright & Johnson	E. Ralph Kooken – Diesel Tran., Inc.
	J.L. Linn
	National Appliance Co.
	Navy Dept. (Child Care Center)
	U.S. Navy
	Northwest Nut Growers
	Ore-Wash. R/R & Nav. Co.
	Paramount Ave. & Printing Co.
	Portable Equipment Co.
	Phil Polsky dba Christenson Oil Co.
	Portland General Electric
	Standard Marine Supply Inc.
	L.D. Stuum
	T.M. Tattam (Western Enterprises)
	J.L. Hudson Co.

Appendix F

Appendix F

Summary of Known and Potential Releases

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
1/16/1943	Unknown	Kaiser Shipyard	Deck and sides of the S.S. Schenectady, fractured just aft of the bridge superstructure while tied up at pier at PSY (releases unknown)	Kaiser Co., Inc.
4/22/1946	Release of oil	Swan Island Lagoon	Release of oil in Berthing Area B in Swan Island Lagoon from pumping out bilges of LST 761 (quantity not reported)	U.S. Navy
5/10/1946	Release of sludge	Swan Island Lagoon	Sludge observed in Swan Island Basin (lagoon), reportedly from dumping from moored ships (quantity not reported); Kaiser Co. also reported Navy personnel using dump adjacent to Naval barracks for deposit of sludge	Kaiser Co., Inc.
6/11/1946	Release of bilge waste	Deperming / degaussing station	Fire at Deperming Station; "indicates that the standing order forbidding pumping of oily bilges is being disobeyed"	U.S. Navy
3/16/1948	Burning of waste materials	Dry Dock 1	Letter from the City of Portland indicates that CBI was burning deck houses and other materials on the pavement near Dry Dock 1 and the outfitting dock in the area where ship dismantling and salvaging occurred.	Consolidated Builders, Inc. (CBI)
00/00/1952	Spill from overturned drum	East side of Building 60	Oblique photograph of construction of Pier C shows overturned drum with unknown substance pooled on the east side of Building 60	Not yet known
4/14/1961	Unknown	Building 2	Removal of "an old oil tank" at Building 2 necessary due to continual problems with pavement settling; tank to be filled with sand and left in place; no confirmation samples reported; may have been installed in 1951	Not yet known
10/31/1961	Dumping of waste material	Swan Island (river side)	"improper dumping of waste material on Swan Island"	Pacific Marine Services
10/10/1962	Unknown	Building 17	During removal of two fuel storage USTs at Building 17, a third UST (approximately 2,000-gallon, reportedly installed in 1954) was discovered and it was reported that it had been installed "when one of the two original tanks had failed"; the tank was badly damaged during removal activities; no confirmation samples reported	Not yet known
2/20/1970	Release of oil	Dry Dock 1 (Navy Dry Dock)	Aerial photographs show release of oil emanating from Dry Dock 1. A ship driving through the slick may have been trying to disperse the material.	Not yet known
4/8/1971	Release of oil	In water; specific location not reported	Oil slick observed at shipyard (quantity not reported)	Albina Engine & Machine Works

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
5/2/1971	Release of oil	In water; specific location not reported	Oil slick associated with M/V LUMBER QUEEN observed at shipyard (quantity not reported)	Freighters, Inc., San Francisco
3/20/1973	Release of waste oil from tanker wash water area	Berth 310	Release of waste oil from tanker wash water tank area at PSY on 3/20/1973; oil, possibly aged Bunker C, was spilled and migrated to an 8 ft. tunnel below the storage tank area, the tunnel connected to a 10" outfall in the vicinity of Berth 310; approx. 200 sq. ft. slick observed in SW corner of small boat base; estimated 2-4 gals released to Willamette River from outfall	Port
10/15/1973	Release of debris and paint from sandblasting & painting	Berth 309	Release of debris and paint to Willamette River from sandblasting and painting work on PAC Barge 302-2 at Berth 309 (quantity not reported)	Pacific Marine Services
8/18/1974	Control house for Dry Dock 3 fell into the river causing release of oil and paint	Dry Dock 3	Release of a foam-like substance was observed adjacent to Dry Dock 3; control house for dry dock fell into the river, sinking with approximately 800 gallons of paint contained in 5-gal buckets, fuel lines, reinforcement rods, and power lines; the retaining bulkhead later collapsed, discharging dirt and asphalt to the Willamette River; a release of oil was also reported (quantity not specified); final estimate of 25 gallons of paint released	Port
5/25/1979	Release of paint thinner		Release of paint thinner (specific date and quantity not reported). Material was cleaned up and reportedly did not reach the river (specific date and quantity not reported)	Northwest Marine Iron Works
9/17/1979	Release of pyronol from transformers	Dry Dock 3	Release of Pyronol from transformers at Dry Dock 3 to Willamette River (quantity not reported)	Port
5/14/1980	Release of oil	Not Reported	Release of oil to Willamette River discharged from ship repair facility (responsible party and quantity not reported)	Not yet known
5/30/1980	Release of herbicide	5617 N. Basin	Release from dumping 5-7 barrels (225 gallons) of various chemical wastes (including herbicide 2,4-D) into manhole on Port property in Mock's Landing; material ultimately discharged to the Willamette River; penalty of $1,000 assessed to Cenex by DEQ	Pax Company (division of Cenex)
2/18/1982	Leaking PCB transformer	Substation No. 5	Leaking PCB transformer at Substation No. 5; media impacted listed as Willamette River (quantity not reported)	Not yet known

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
2/18/1982	Leaking PCB transformer	Substation No. 5	Leaking PCB transformer at Substation No. 5 (quantity and impacted media not reported)	Not yet known
3/18/1982	Leaking PCB transformers	Substation No. 5	Three transformers at Substation 5 leaking PCB-contaminated oil over 3-month period; transformers located 30 feet from floor drain (quantity and affected media not reported)	Port
4/11/1982	Release of oil	In water; specific location not reported	Release of estimated 900 barrels of material from Tank 7 containing 50 mg/L suspended solids, 12.4 to 13.2 mg/L oil & pH 6.6	Not yet known
5/13/1982	Release of lube oil	Wet Berth	Tail shaft being pulled while ship was in wet berth in the shipyard at facility under operation by Northwest Marine Iron Works; the ship was boomed prior to spill; absorbent material used to clean up the remaining oil; estimated 2 gallons of lube oil released to Willamette River	Northwest Marine Iron Works
4/1/1983	Release from PCB transformer	Bay 1, Building 4	Release of PCB-contaminated oil from leaking valve on transformer at Bay 1 in Building 4; transformer was transported around on a trailer and tracked oil around a 400 sq. ft. concrete area; an estimated 3x10 ft. area of concrete was impacted by spill and required action; cleanup conducted by Chem-Security Systems, Inc. (quantity not reported)	Port
2/15/1984	Release from transformer	Dry Dock 1	Flood from a broken pipe in transformer storage area at Dry Dock 1; no PCBs found in water greater than 10 ppm	Not yet known
3/17/1986	Release from drum	5949 N. Basin	Fiberglass drum fell off a pallet from forklift while unloading; estimated 230 gals of dextrin (water soluble glue) released to soil; Portland Fire Dept. did initial cleanup	Milne Trucking Co.
4/23/1986	Release of oil in pipeline on ship in dry dock	Dry Dock 4	Discharge of pipeline/oil in line/discharging ballast at Dry Dock 4; boom put out, cleanup crew called; 10 x 50 sheen observed; estimated 1 cup Alaska North Slope crude oil released to Willamette River	T/V ARCO SAG RIVER
4/27/1986	Release of oil from ship repair	Dry Dock	Swan Island dry dock starboard side; tank ship placed back in water and noticed sheen; 10 x 10 sheen observed, estimated 1/2 cup crude oil released to Willamette River	Not yet known
6/18/1986	Release of hydraulic oil from ship repair	Dry Dock	Hydraulic line parted on the M/V CHEVRON LA; estimated less than 1 gallon hydraulic oil released to Willamette River	M/V CHEVRON LA
1/25/1987	Release of oil from a vessel	Pier 3	Lubricating oil in bilge from USNS WILKES (oceanographic vessel) overflowed into open seachest and discharged to water; estimated 1 gallon released to Willamette River	Dillingham Ship Repair

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
6/11/1987	Release of diesel from vessel sinking	Swan Island	32' boat sank (unknown reason); estimated 20 gallons diesel fuel released to Willamette River	Not yet known
11/14/1987	Sheen observed around dry dock	Dry Dock	Estimated 50-100' oil slick observed flowing from drydock which was being flooded to lower the MARYLAND (formerly STUDEVANT) into the water; no additional information available	Not yet known
8/24/1988	Release of sandblast grit & paint chips	Berth 313	WSI sandblasting the Exxon LONG BEACH released sandblast grit and paint chips into the river	West State, Inc.
8/25/1988	Release of sandblast grit	Shipyard	DEQ observed Northwest Marine Iron Works dumping sandblast sand and wastewater over the side of a ship during a routine inspection	Northwest Marine Iron Works
8/26/1988	Release of oil	Swan Island Lagoon	Oil on river observed off Freightliner Corp.	Not yet known
10/19/1988	Release of sanblast grit	Berth 313	Complaint filed indicating Northwest Marine Iron Works dumped sandblast sand in the river at night	Northwest Marine Iron Works
7/19/1989	Release of hydraulic oil	Dry Dock 4	Estimated 1 quart of hydraulic oil was released to Willamette River due to equipment failure; a hydraulic hose on a man lift arm broke during a painting operation on the SS ATIGUN PASS. No oil was recovered. Port was fined $100 for violation of CWA.	Cascade General
8/22/1989	Smoke, soot & noise		Smoke, soot & noise observed from ATIGISON PASS (may have been blowing boil)	Not yet known
9/29/1989	Release of sandblast grit	5555 N. Channel	Incident occurred with U.S. Navy Barge 60, where a subcontractor allowed sandblast grit to enter the Willamette River	Cascade General & Blasco Inc.
12/28/1989	Release of oil during transfer operations	Swan Island Ship Yard	Dredge ESSAYONS (COE dredge), while transferring; approximate. 10' sheen observed; estimated 1 gallon motor oil released to Willamette River	U.S. Army Corps of Engineers
5/6/1990	Release of turbine oil	ARCO Module Fabrication Site	Spill occurred when valves were not closed properly on a gas turbine when the system was shut down; estimated 150 gallons of 10 wt. turbine oil released to ground surface; minimal soil impact reported; Chempro removed approx. 54 tons of contaminated material	Wright Schuchart Harbor Co.
9/23/1990	Release of hydraulic oil from a vessel	Berth 303	Hydraulic oil released from Dredge ESSAYONS due to equipment failure at Berth 303; approximet 6,000 sq. ft. sheen observed; estimated 10 gallons hydraulic oil released to Willamette River	U.S. Army Corps of Engineers

APPENDIX F
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SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
10/7/1990	Release of oil, dust and paint from vessel cleaning operations	Berth 304	Lockwood using high power system to clean aft and midsection of SEA-LAND HAWAII (which was under contract w/ Northwest Marine); protective curtain was not in place, and material (oil, dust & paint) was washed into Willamette River; several sheens were observed; no additional information provided	Lockwood
11/9/1990	Release of Oil	44 NE Channel Ave	Diesel spill from storm drain	Not yet known
11/11/1990	Sheen observed around dry docks	Dry Docks	Heavy oil sheen reported around Dry Docks 3 & 4 in the area of the small boat basin; source not related to PSY or contractors; no additional information available	Not yet known
11/13/1990	Sheen observed on water	Berth 304 Bent 1 & 18	Oil sheen observed on water	Not yet known
12/7/1990	Release of oil	Berth 302	Bunker overflow at Berth 302	Not yet known
12/9/1990	Release of oil	Berth 305 Bents 116-?	Oil and debris observed in water	Not yet known
12/12/1990	Release of sanblast grit	PSY	Release of sandblast grit into Willamette River from sandblasting over water	Northwest Marine Iron Works
12/15/1990	Unknown release	PSY	Foamy material observed on water	Not yet known
12/23/1990	Unknown release	PSY	Release of foam into river from SEA-LAND NAVIGATOR	Cascade General
1/6/1991	Release of oil	Berth 302	Oil sheen observed on water	Not yet known
1/21/1991	n/a	BWTP	Noxious sulfur smell - no release reported	Not yet known
1/26/1991	Release of sanblast grit	Berth 314	Release of sandblast grit into river	Not yet known
2/9/1991	Release of sanblast grit	Berth 312	Release from shoveling sandblast sand into river	Not yet known
2/13/1991	Dredge Oregon	Navigation	Diesel spill - Booster P. Col	Port
2/17/1991	Release of paint	Berth 303	Paint spill in water	Not yet known
4/8/1991	Release of sandblast grit	PSY - wet berth	Sandblast sand washed into river	Not yet known
4/17/1991	Release of oil from dumping	Berth 314, Pier D (Northwest Marine facility)	Release of oil due to illegal dumping down storm drain by Northwest Marine Ironworks from EXXON BENICIA; appox. 30' wide x 300 ft to 1.5 mile long sheen; estimated 150-200 gallons lubricating oil released to Willamette River	Northwest Marine Iron Works
4/17/1991	Sludge spill on pier	Between Berth 109 & 110	While investigating source of above release, several barrels of sludge were identified between Berths 109 and 110, and spillage from the barrels was observed; quantity and affected media not reported	Northwest Marine Iron Works
4/27/1991	Hydraulic oil spill	Pier C	Hydraulic oil spill at Dry Dock	Not yet known
5/4/1991	Release of sandblast grit & paint chips	Berth 302-304	Release of sandblast grit & paint chips into river	Not yet known
5/4/1991	Release of sandblast grit	Berth 314	Release of sandblast grit into river	Not yet known
6/9/1991	Release of sandblast grit	Berth 311-312	Sandblast sand released to river	Not yet known

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SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
6/25/1991	Release of oil	Berth 311	Oil sheen observed in water	Not yet known
7/18/1991	Release of oil during transfer operations	Rivermile 8.5	Waste oil tank overfilled while pumping the bilges of USS WILLIAM H. STANDLEY; estimated 3 gallons of waste oil/lubricants released to Willamette River	U.S. Navy
8/13/1991	Release of oil during transfer operations	Berth 302	Incorrect valve opened while pumping bilges on T/S DELAWARE TRADER; estimated 2 gallons of waste oil/lubricants released to Willamette River	American Trading Trans
8/20/1991	Unknown release	Dry Dock 4	Foamy material observed coming from a vessel	Not yet known
9/16/1991	Release of oil	Portland Ship Repair Yard	Sheen observed at Rivermile 8.5; estimated 35 gallons of waste oil/lubricants released to Willamette River	Northwest Marine Iron Works
10/2/1991	Release of sandblast sand	Dry Dock 4	Sandblast sand in water	Not yet known
10/9/1991	Release of gasoline from leaking fuel tank	River Mile 8.2	Leaking from USNS HASSAYAMPA due to structural failure of hull due to cracks in fuel tank; estimated 5 gallons of aviation gasoline (4.86G PB/gal) released to Willamette River	United States (federal govt)
10/12/1991	Release of diesel fuel	Dry Dock 4	Oil sheen (diesel) on water	Not yet known
11/6/1991	Release of oil	Berth 305-311	Oil slick observed on water	Not yet known
11/30/1991	Unknown release	PSY - Willamette River	Yellow sheen observed coming from storm drain	Not yet known
12/21/1991	Release of oil	Berth 304	Oil sheen observed on water	Not yet known
1/8/1992	Release of fuel oil due to overfilling	Berth 305	Release of No. 2-D fuel oil to water from M/V PACIFIC EXPLORER at Berth 305 due to overfilling; estimated 3 barrels released to Swan Island Lagoon	American Seafoods Inc.
1/11/1992	Release of oil	Berths 304-305	Oil sheen observed on water	Not yet known
2/2/1992	Release of oil	Berth 304	Oil sheen observed on water	Not yet known
2/21/1992	Release of oil	Berth 304	Oil sheen observed on water	Not yet known
3/19/1992	Unknown release	Pier A - Berth 303	Orange colored material observed	Not yet known
4/1/1992	Release of sandblast grit	Dry Dock 3 & Berth 313	Sandblast grit observed in water	Not yet known
4/2/1992	Unknown release	Berth 311 storm drain	Orange material observed discharged from storm drain into river	Not yet known
4/3/1992	Release of wastewater	Berth 314	Dirty water dumped into river	Not yet known
4/5/1992	Release of oil	Berths 313-314	Oil sheen observed in water	Not yet known
5/6/1992	Release of oil	Swan Island Lagoon	Oily sheen observed from runoff	Not yet known
5/12/1992	Release of oil	Berth 311	Oil sheen observed in water	Not yet known
5/17/1992	Release of dust to lagoon	Berth 304	Dust discharged from vessel Philadelphia at Berth 304 to the lagoon instead of a bag house. Reportedly due to mechanical failure.	West State, Inc.
7/9/1992	Release of hydraulic oil from leaking crane	Dry Dock 4	Crane for Dry Dock 4 was observed to have a hydraulic oil leak which had "contaminated the vessels port side".	Not yet known
10/8/1992	Sheen observed in Lagoon	Swan Island Lagoon	Sheen observed in lagoon; type of material, quantity and source not known	Not yet known

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
10/28/1992	Release of diesel during transfer operations	Berth 313	Material was discovered to be leaking during transfer of diesel from T/B BMC-4 to tankser KEYSTONE CANYON Berth 313; amount released reported as unknown	Not yet known
1/26/1993	Release of oil	Berth 312, Pier D	Release of oil on pier from S/S AUSTRAL LIGHTNING	AUSTRAL LIGHTNING
3/15/1993	Release of oil during discharge operations	Berth 313	Release of Bunker C oil from gray water discharge line on T/S EXXON BENICIA at Berth 313; estimated 0.01 gallon released to Willamette River	Exxon Shipping Co.
4/16/1993	Release of heating oil	Central Utility Building	Release of #6 heating oil discovered from damaged fitting on oil return line for UST #2 which resulted in partial flooding of tank base vault; approx. 35 gallons of heating oil removed from vault; estimated 6.5 cubic yards of soil impacted (groundwater impacts not reported)	Not yet known
7/20/1993	Release of hydraulic oil from dock line	Not Reported	Release of hydraulic oil from hydraulic line on dock due to equipment failure; estimated 50 gallons hydraulic oil released to Willamette River; cleanup conducted by Riedel	Port of Portland
10/00/1993	Dumping of contaminated soil	Module Road	During a yard cleanup in October 1993, cadmium-contaminated soil was discovered upriver from Berth 314; soil was dumped by an unknown party; approx. 10 cubic yards of soil was removed from the module storage area	Not yet known
3/15/1994	Release of hydraulic oil	Berth 302	Release of hydraulic oil from bucket knocked over on F/T AMERICAN DYNASTY while at Berth 302; 10' x 10' sheen observed; estimated 0.5-1 cup hydraulic oil released to Willamette River	General Steamship Corp.
4/18/1994	Mercury contamination	Dry Dock 3 Control Room	Several mercury-containing, wall-mounted control gauges had broken seals and leaked mercury onto the control console and onto the Control Room floor; mercury contamination was cleaned up (surfaces and vapors tested)	Not yet known
7/6/1994	Release of turbine oil	Berth 314	Stern tube seal on M/V SEA RIVER NORTH SLOPE released while at Berth 314; estimated 2 gallons of turbine oil released to Willamette River	Cascade General
7/12/1994	Release of jet fuel	Berth 302	Release of jet fuel #5 (heavy kerosene) during removal of cargo hoses from USNS GUADALUPE at Berth 302 due to operator error; approx. 1.5' x 60' sheen observed; estimated 1 pint of juet fuel released to Willamette River	Cascade General

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
9/24/1994	Release of hydraulic oil	Dry Dock 4	Release of hydraulic oil to water from M/V SEALIFT ANTARCTIC (possibly prop shaft); estimated 1 ounce hydraulic oil released to Willamette River	M/V SEALIFT ANTARCTIC
2/6/1995	Oil spill observed	Building 4, Bay 2	An oil spill was noted on the floor near a sheet metal cutting/bending machine; type of oil, quantity, and affected media not reported	West State, Inc.
5/25/1995	Release of oil	Tank Farm Street Sump	A small spill occurred in front of the ballast water treatment plant at the truck pumping double containment area due to employee error; no oil was discharged into the river; spill cleaned up	Not yet known
10/9/1995	Ballast water spill	Not Reported	Oil in lines used to release ballast water spilled during dry dockage	Cascade General
10/17/1995	Release of hydraulic oil from a vessel	Berth 315	Release of hydraulic oil due to equipment failure; hydraulic seal in a hose boom on steam tanker broke on KEYSTONE CANYON while at Berth 315; approx. 75' x 20' red sheen observed; estimated 1 gallon hydraulic oil released to Willamette River	Keystone Shipping Co.
4/9/1996	Release of unknown oil	Berth 302	Release of unknown oil from USS HIGGINS while at Berth 302 due to break in line in stern at bottom of vessel; approx. 50' x 3' black oil sheen observed; vessel was reportedly to be mothballed and quantity of oil on vessel was to be reported to DEQ; estimated 25 gallons of unknown oil released to Willamette River	Cascade General
6/25/1996	Release of oil	Swan Island Lagoon	Sheen observed in the lagoon	Not yet known
7/8/1996	Release of oil	5555 N. Channel Ave	While changing the ships ballast (Green Harbour) oil leaked out along the stern tube. USCG investigated and approved cleanup.	Green Harbour
8/14/1996	Release of glue-like substance	Swan Island Lagoon	A substance that appeared to be glue was found coming out of a storm dran, entering the lagoon at Cascade General/USCG area of the Swan Island Lagoon	Not yet known
8/29/1996	Release of oil	Berth 310	Hose broke on air compressor on crane barge SEA LION while at Berth 310; approx. 15' x 50' sheen observed; estimated 2 gallons of oil released to Willamette River	Hickey Marine
9/3/1996	Release of oil	Berth 314	Approximately 5-10 gallons of oil released to the river from a vessel at Berth 314. Absorbent pads and sweeps used and disposed of at an approved disposal facility.	Not yet known
9/16/1996	Release of oil	Cascade General Yard	Bulk carrier TAI SHING leaking oil from unknown source; unknown quantity released to Willamette River	General Steamship Corp.

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
9/16/1996	Release of oil	Cascade General Yard	Unknown volume fuel/oil sheen	Cascade General
10/8/1996	Release of fuel	6767 N. Basin Avenue	During refueling a work boat from shoreside, the surge suppressor failed. No cleanup. Product dissipated.	Not yet known
4/18/1997	Release of wastewater	Dry Dock 4	Wastewater generated from cleaning a chain locker on a ship in dry dock was discharged to the river. The volume released is unknown. A boom was deployed and absorbant pads were used to absorb contained debris.	Not yet known
5/31/1997	Release of oil	Berth 312	Approx. 1/4 mile x 2000' rainbow-colored sheen observed; unknown quantity of unknown oil released	Not yet known
8/28/1997	Release of oil	Swan Island Lagoon	Approx. 100 yd x 200 yd black oil w/ gray sheen observed on Swan Island Lagoon; estimated 40 gallons of unknown oil released to lagoon; source not known	Not yet known
8/28/1997	Release of oil	Swan Island Lagoon	Black waste oil spill from unknown source coming from outfall. Estimated 25 gallons.	Pacific Detroit Diesel
9/27/1997	Release of diesel	Berth 305	Release of diesel from fuel tank on rolloff truck; truck struck piece of I-beam and damaged tank while at Berth 305; estimated 22 gallons of diesel released to Willamette River	Cascade General
9/27/1997	Release of diesel	Cascade General Yard	Approximately 50 gallons diesel released. 20 yards in storm drain	Cascade General
11/13/1997	Release of crude oil from pipeline	5555 N. Channel	Release of crude oil from oil transfer pipeline due to equipment failure; approx 50' x 500' sheen observed; estimated 100 gallons crude oil released to Willamette River	Cascade General
12/23/1997	Release of diesel	Cascade General Yard	Approximately 25-50 gallons diesel through the parking lot. Appeared to be related to vandalism. Puddles on the pavement but no impacts to the river or water. Sand/sorbent used for clean-up.	Cascade General
5/3/1998	Guts and grease	Cascade General Yard	Security guard at Cascade reported seeing guts and grease comming out of the storm drain at Linden farm chicken processor.	Linden Farms
9/15/1998	Release of oil	5555 N. Channel	Release of unknown oil from M/V CSO CONSTRUCT while undergoing repair at Cascade General; approx. 10 sq. meter sheen discovered around vessel, source unknown; unknown quantity released to Willamette River	M/V CSO CONSTRUCT
10/20/1998	Release of oil	Berth 312	Approximately 25 gallons from rented mobile generator- 5 gal reached river-creating 900' X 40' SHEEN- user discovered unplugged line on fuel tank.	Cascade General
11/9/1998	Release of oil	N. Basin Avenue	Sheen on river from outfall. USCG determined it to be unrecoverable.	Not yet known

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SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
11/10/1998	Release of oil	Ensign Avenue	Oil coming from outfall M-1. BES boomed and was looking for source.	Not yet known
1/29/1999	Release of hydraulic oil	Dry Docks	Approximately 5 gallons of Hydraulic oil spilled onto dry dock and into the river.	Cascade General
3/10/1999	Release of oil	Swan Island Lagoon	Oil Sheen near Fred Divine outfall (outfall one mile) 400'X 1,000' - unrecoverable	Fred Devine Diving & Salvage
6/5/1999	Release of oil	Berth 314	Release of unknown oil from M/V DENALI; approx. 40' x 5' rainbow-colored sheen observed at Berth 314; unknown quantity of oil released to Willamette River	Alaska Tanker Company
12/21/1999	Release of oil	Pier	Sheen observed under pier	Cascade General
12/23/1999	Release of waste oil barge cleaning operations	5555 N. Channel	Connection to vacuum hose came loose while cleaning barge; approx. 50' x 50' rainbow-colored sheen observed; estimated 2-3 gallons of waste oil/bunker/diesel fuel released to Swan Island Lagoon of Willamette River. Spill location was within a preboomed area. Cleaned with pads.	West Coast Marine
3/21/2000	Release of diesel	Cascade General Yard	Fueling power barge - check ball valve failed with release of ~ 5 gal diesel into river - no drinking water intakes impacted	Not yet known
4/5/2000	Release of oil	Cascade General Yard	Approximately .5 gal released to water	Not yet known
4/9/2000	Release of hydraulic oil	Berth 302	M/V CHEVRON COLORADO controllable pitch/prop seal failed causing hydraulic oil release; approx. 5' x 10' sheen observed; unknown quantity of oil released to Willamette River	Chevron
5/2/2000	Release of diesel	6458 N. Basin Ave	MVA with 80 gallons of diesel going to a storm drain - semi leaking. Drain is 500 - 1000 yards fromt he river. Fire boat on scene; product not yet visible on river. BES enroute. USCG contacted.	Not yet known
5/14/2000	Release of crude oil	Berth 312	Release of crude oil from M/V ARCO SPIRIT at Berth 312; cause of release unknown; small sheen observed; unknown quantity of material released to Willamette River	ARCO
5/14/2000	Release of crude oil	Swan Island Dry Dock	Release of crude oil from 11,000 ft. tanker in layup (POLAR SPIRIT) leaking drops every few minutes into dry dock; unknown quantity of oil released to Willamette River. Residential oil is sea chest. Partside bubbles of crude on large leak. USCG, PDX Fire called by OERS will also call ODFW Clean Rivers and ship boomed	Polar Tankers
5/22/2000	Release of diesel	Cascade General Yard	Approximately 3 gallon fuel can of diesel got knocked over, was not on contained (oil/water separator) area of dock.	Cascade General

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PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
6/9/2000	Release of hydraulic oil	Berth 312	Material released while testing emergency fire pump on ARCO SPIRIT at Berth 312; estimated 1 barrel of hydraulic oil released to Willamette River	General Steamship Corp.
6/9/2000	Release of unknown oil	Cascade General Yard	Spill from M/V ALASKAN JEWEL while testing fire fighting system; unknown quantity of oil released to Willamette River	Danker Pacific
6/15/2000	Release of lubricating oil	Cascade General Yard	Ship crew over-pressurized stern tube causing release of lubricating oil from M/V TALL BUCK; estimated 1 gallon lubricating oil released to Swan Island Lagoon	M/V TALL BUCK
6/15/2000	Release of unknown oil	Swan Island Ship Repair Yard	Release of estimated 1-10 gallons of oil from MSC PAUL BUCK (USMM tanker) in shipyard; originated from overpressurized stern tube seal (propellor).	General Steamship Corp.
7/9/2000	Release of hydraulic oil	Cascade General Yard	Tanker Pacific Management - release from ALASKA JEWEL. Cowlitz Clean Sweep enroute. Testing fire pump, foam is mixed with hydraulic oil/discharge on deck & over the side.	Tanker Pacific Management
10/1/2000	Release of lubricating oil	5555 N. Channel	Heavy rains caused sump on M/V RIO DA LUZ to overflow; approx. 20' x 20' sheen observed; estimated 2 gallons of oil released to Willamette River	PG&E
10/4/2000	Release of lubricating oil from a pipeline	5555 N. Channel	Release of lubricating oil from 6-inch slop line during testing operations due to a cracked valve; approx. 40' x 3' rainbow-colored sheen observed; estimated 5 gallons of oil released to Willamette River	Cascade General
10/17/2000	Release of waste oil from a pipeline	5555 N. Channel	A gasket on 6-inch oil slop line failed causing waste oil to spill from the line into Swan Island Lagoon; approx. 15' x 3' sheen observed; estimated 2 gallons of bunker-like waste oil released to Willamette River	Cascade General
11/11/2000	Release of bilge waste	Berth 304	Vessel pumping slops to a pump truck and hose broke behind truck, releasing material onto dock; estimated 2 gallons of bilge slop released to Willamette River	American Classic Voyages
11/15/2000	Release of blast grit	6767 N. Basin Avenue	Unknown material resembling blast grit is "floating" near dock - sinks when touched	Not yet known
11/27/2000	Release of oil from hose	Dry Dock 1	Release of oil / Mobile L EAL 224H from a hose on a hydraulic unit bursting; approx. 30' x 30' sheen observed; estimated 3 gallons of oil released to Willamette River	Fred Devine Diving & Salvage
12/6/2000	Release of hydraulic oil from equipment	5555 N. Channel	Release of hydraulic oil from hose line on a piece of equipment being loaded onto a barge; approx. 15' x 3' rainbow-colored sheen observed; estimated 0.5 gallons hydraulic oil released to Willamette River	Cascade General

APPENDIX F
SUMMARY OF KNOWN AND POTENTIAL RELEASES
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PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
12/7/2000	Chemical and oil spill	5400 N. Basin Avenue	Semi flipped over - one trailer contained 6,000 gallons 7% NaOH and activator in five totes, (2NaOH, 3 Activator) - one of five leaked. Second trailer contained 393# of class III fireworks on pallets - no spill. Some diesel spilled.	Not yet known
12/16/2000	Release of oil	Cascade General Yard	Residual oil spilled from equipment being loaded onto a barge - most contained on barge - .5 gal into Willamette River	Cascade General
12/19/2000	Release of hydraulic oil	Cascade General Yard	Release from repair on a hydraulic line on COE Dredge ESSAYONS; approx. 100' x 5' rainbow-colored sheen observed; estimated 2 gallons hydraulic oil released to Willamette River	Cascade General
1/12/2001	Release of oil	Dry Dock 4	Oil sheen released from Dry Dock 4 during the re-float of Navy ship "Tippecanoe"	Cascade General
1/19/2001	Release of hydraulic oil	Cascade General Yard	Release of hydraulic oil from GLOBAL SENTINEL due to a ruptured hose in the bow thruster; approx. 500' x 500' rainbow-colored sheen observed; estimated 0.5 gallons hydraulic oil released to Willamette River	Transoceanic Shipping Company
1/31/2001	Release of oil	Swan Island Lagoon	Light sheen discharge from outfall - 50'X50'	Not yet known
6/25/2001	Release of marine gas	Berth 313	Release of marine oil gas from a faulty cap on a sounding pipe on M/V DANSUS while on dry dock; approx. 20m x 4m bluish-colored sheen observed; estimated 1 gallon or 5 liters of marine gas oil released to Willamette River; also states release was automotive gasoline	Trans Marine Navigation Company
8/10/2001	Release of oil	Cascade General Yard	Slight sheen on Willamette.	Cascade General
9/23/2001	Release of unknown oil	Berth 103 (Berth 301?)	Approx. 10' x 3' rainbow-colored sheen observed on water; release of unknown quantity of oil to Willamette River from an unidentified source	Not yet known
10/18/2001	Release of unknown petroleum product	Berth 313	Approx. 100' x 15' sheen observed; estimated 2 pints of unknown petroleum product released to Willamette River from an unidentified source	Not yet known
10/18/2001	Release of unknown oil	Berth 313	Approx 100' x 15' rainbow-colored sheen observed on water; release of unknown quantity of unknown oil to Willamette River from an unidentified source	Cascade General
10/19/2001	Release of unknown oil	Berth 313	Release of unknown oil from S/R GALENA BAY; estimated 1 pint released to Willamette River	Seariver Maritime
10/19/2001	Release of lubricating oil	Berth 313	Leak in lube oil cooler in engine room of S/R GALENA BAY; approx. 10' x 10' rainbow-colored sheen observed; estimated 1 pint lubricating oil released to Willamette River	Seariver Maritime

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PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
4/11/2002	Release of lube oil	Cascade General Yard	Release of 2 liters of oil into Willamette from ship at Berth 304; vessel - cargo oil - lube 1 gal surf	Cascade General
4/13/2002	Release of unknown oil	Berth 304	Release from TYCOM RELIANCE due to unknown cause; estimated 2 liters of unknown oil released to Willamette River	Transoceanic Shipping Company
4/18/2002	Release of unknown oil from a vessel	Berth 314	Sheen observed from port quarter of USNS YUKON between the USNS YUKON and the containment boom at berth 314; approx. 100' x 50' rainbow-colored sheen observed; unknown quantity of unidentified oil released to Willamette River	Cascade General / U.S. Navy
8/4/2002	Release of unknown oil	Berth 304	Sheen observed on water; release of unknown oil to Willamette River from an unknown source	Not yet known
8/9/2002	Unknown release	5885 N. Basin	Delivery truck at office depot hit a curb and damaged radiator.	Office Depot
11/9/2002	Release of oil	Cascade General Yard	Sheen on Willamette.	Cascade General
12/2/2002	Release of bilge waste	Cascade General Yard	Release of bilge waste during pumping of slop tank of USNS KISKA TAE 35 (tank was overfilled); unknown quantity of material released to Willamette River	Cascade General
3/28/2003	Release of oil	Cascade General Yard	A piece of metal fell into the work lagoon. Approximately 1 gallon of oil released to surface water	Cascade General
5/29/2003	Release of lubricating oil from a vessel	Cascade General Yard	Release of lubricating oil to water from a vessel	General Steamship Corp.
5/29/2003	Release of lubricating oil from a vessel	Berth 313	Release to river of approximately 55 gallons of lubricating oil from broken lube line on vessel UNIVERSE EXPLORER.	General Steamship Corp. (Jeff Doerfler)
6/2/2003	Release of oil	Cascade General Yard	Small 8' X 8' sheen out boom of UNIVERSE EXPLORER - believed to be from the VENETIA, a neighboring ship	VENETIA
6/29/2003	Release of hydraulic oil from a vessel	Berth 302/303	Release of hydraulic oil to water from a vessel at Berth 302/303. Fluid reportedly spilled in water at Swan Island while testing port hose that sprung a leak.	Chevron Texaco Shipping (Doug Lathrop)
8/22/2003	Release of hydraulic oil from a vessel	Cascade General Yard	Contractor working on the USNS SISLER at Cascade General spilled ~10 gallons of hydraulic fluid into the river. Boomed and cleanup in progress. USCG not responding due to reduced manning.	Ballard Diving & Salvage Inc. (Rick Benson)
11/25/2003	Release of lubricating oil from a vessel	Cascade General Yard	22-50 gallons of lubricating oil released during transfer to Navy vessel docked at Swan Island in Portland. ~15 gallons released to Willamette River. Absorbents and booms deployed & release was secured. OERS contacted USCG who is considering a response.	U.S. Navy (John Olmstead)

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SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Date	Event/Source	Location	Description	Responsible Party
12/1/2004	Release of oil	Cascade General Yard	Doppler speed log was being replaced on the USNS HENRY K. KAISER when approximately 5 gallons of oil was released to the Willamette River	Military Sealift Command
2/17/2005	Release of oil	Cascade General Yard	Approximately 1 gallon of oil released from vessel to the Willamette River; cause unknown; booms applied and West Coast Marine hired to do cleanup	Cascade General
4/27/2005	Release of oil	Cascade General Yard	Sheen observed on Willamette River outboard of the M/V COLUMBIA; cause and quantity unknown	Cascade General

Appendix G

Appendix G

Ships Repaired 1950 – 1995

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Albina Engine & Machine	AMERICAN EAGLE	AMERICAN MAIL	JAPAN MAIL		ALASKA MAIL
	Barge 37500	CANADA MAIL	MARINE		ANTINOUS
	Barge 50-F	COTTONWOOD CREEK	ROBINHOOD		ARL 30
	Barge B-29200W	GEORGE LUCKENBACH	ZEPHRHILLS		ARLINGTON
	BLATCHFORD	LST 1077			BANNER LOCK
	LELAND JAMES	PACIFIC			BARBARA FRIETCHIE
	M.E. LOMBARDI	PATRICIA			Barge 143
	MISSION SANTA ANA	TIGER			Barge 201
	NELCO #1				Barge HTB 21
	OLD DOMINION STATE				EVIBELLE
	OLYMPIC PIONEER				IBERVILLE
	SEAMANOR				JOSEFINA
	SWARTHMORE VICTORY				PERMANENTE SILVERBOW
	TILLAMOOK				POINT ARENA (RICE QUEEN)
	TUCSON VICTORY				PVT. NANTI FIORI
	YORK				TEXACO CALIFORNIA
					TIGER
					TRANSERIE
ARCO				Barge 409	
				ISLA BONITA	
				ISLA DEL SOL	
Ballard Diving & Salvage					SISLER
Cascade General	ADVENTURER		AMERICAN DYNASTY	ADMIRALTY BAY	ALERT
	AMERICAN EMPRESS		AMERICAN EMPRESS	ALTAIR	AMERICAN DYNASTY
	AQUA MARINE 242		AMERICAN TRIUMPH	ANGELIC SPIRIT	AQUA MARINE 242
	ASSURANCE		Barge 407	ARCO ALASKA	ARCO PRUDHOE BAY
	AUDACIOUS		Barge 450-3	ARCO FAIRBANKS	ATIGUN PASS
	BANDON		Barge 450-6	ARCO JUNEAU	Barge 406
	Barge 250-3		Barge 71	ARCO PRUDHOE BAY	Barge 450-6
	Barge 401		Barge AFBD 4	ARCO SAG RIVER	Barge 450-7
	Barge 6		Barge DB 24	ASPEN	Barge BMC 36
	Barge 60		Barge ST 40	ATIGUN PASS	Barge GL 34
	Barge 66		CAPE BON	Barge 702	Barge LCU 1635
	Barge 703		CAPE BORDA	Barge KC 3	Barge LCU 1648
	Barge 90		CAPE BOVER	BAY RIDGE	BLUE RIDGE
	Barge BMC 36		CASCADE	CAPE HORN	BOBBIE JEAN
	Barge BMC 37		CHARLES L. BROWN	CAPE ORLANDO	CALIFORNIA
	Barge GL 35		CHEVRON OREGON	CONSTITUTION	CAPE ORLANDO
	Barge LCU 1652		COLUMBIA	EXPRESS FRANCE	CASCADE
	Barge LCU 1666		DELAWARE TRADER	EXXON BATON ROUGE	CHEHALIS
	Barge ST 40		ESSAYONS	EXXON JAMESTOWN	CHETCO
	Barge ZB 285		EXXON GALVESTON	EXXON LONG BEACH	CHEVRON COLORADO
	BILLIE K.		GEM STATE	EXXON NORTH SLOPE	COLUMBIA
	BISMARK		GLACIER BAY	EXXON PHILADELPHIA	CORNUCOPIA
	CASCADE		GLOBAL SENTINEL	GLACIER BAY	CSO CONSTRUCT
	CHALLENGER (TYEE)		HASSAYAMPA	GLOBAL SENTINEL	DELAWARE TRADER

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Cascade General (continued)	CHINOOK		HAWAII	GOLDEN GATE	ESSAYONS
	CLARKSTON		ISLA DEL SOL	INDEPENDENCE	EXXON BAYTOWN
	CLEARWATER		KAMALU	ISLE BONITA	EXXON BENICIA
	COLUMBIA		KAWISHIWI	KAUAI	EXXON LONG BEACH
	Crane Barge		LELAND JAMES	KENAI	EXXON PHILADELPHIA
	CRUSADER		MILLICOMA	KEYSTONE CANYON	GLACIER BAY
	DE STEIGUER		NEHALEM	LANAI	GUADALUPE
	Dredge #53		NESTUCCA	LIBERTY STAR	GUADALUPE (T-AO 200)
	ELLEN FOSS		NORTHERN LIGHT	MANUKAI	HASSAYAMPA
	EXECUTIVE EXPLORER		OBSERVATION ISLAND	MAUI	HIGGINS
	GLACIER BAY		PHILADELPHIA SUN	MAURY	JOHN ERICSSON
	GLADIATOR		POLAR SEA	MERCURY	KLAMATH
	GOLDEN STATE		POLAR STAR	NESTUCCA	Liberty Hull (white)
	HAYES		QUINALT	NIEUW AMSTERDAM	LOFGREN
	HEDGES		ROBERT E.	NOBLE STAR	NORTHERN EAGLE
	HERCULES		SEALIFT ANTARCTIC	OVERSEAS CHICAGO	OREGON
	ICE BEAR		SEALIFT CHINA SEA	PATHFINDER II	OVERSEAS BOSTON
	IRIS		SIUSLAW	PRESIDENT CLEVELAND	OVERSEAS JUNEAU
	KA'ALA		TYEE	PRINCE WILLIAM SOUND	PATHFINDER
	LEWISTON		YAQUINA	PROSPECTOR II	PHILADELPHIA SUN
	Liberty Hull			REGENT SEA	POINT LOMA
	MARS			REGENT STAR	PRINCE WILLIAM SOUND
	MILLICOMA			SEA-LAND ANCHORAGE	REGENT STAR
	NORTHERN WARRIOR			SEA-LAND ENTERPRISE	ROTTERDAM
	OREGON			SEA-LAND KODIAK	SEA RIVER NORTH SLOPE
	OREGON (ex ROBIN)			SEA-LAND TACOMA	SEA-LAND NAVIGATOR
	OUTLAW			SEA-LAND TRADER	STAR PRINCESS
	PACIFIC EXPLORER			SEALIFT ANTARCTIC	SUPER BOOSTER
	PACIFIC SCOUT			SILAS BENT	TAZLINA
	PETER J. BRIX			STUYVESANT	TOTEM
	Piggy Back			TIPPECANOE	VICTORIOUS
	PORTLAND			TONSINA	YAQUINA
	QUINALT			TOTEM	YUKON
	ROGUE			WESTERDAM	ZORRA
	SALVAGE CHIEF				
	SCANDIA				
	SEA LION				
	SHAVER				
	SIEGFRIED TIGER				
	SILAS BENT				
	T.T. AMERICA				
	TIDEWATER				
	TITAN				
	TUNY				
	TYEE				
	UMATILLA				
	WECOMA				
	WILKES				
	WILLAMETTE MARINER				
	YAQUINA				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Blasco	Barge 60				
Consolidated Builders	REFUGE				BENJAMIN CHEW
					BOUNTIFUL
					HENDERSON
					LST 398
					PAINT FLOAT
					SEA CAT
					WYN. SEALE
Crosby & Overton				JANE ADDAMS	
Dillingham Ship Repair	AEOLUS	Barge 1002	ALASKA	ARCO ALASKA	
	ARCO RESOLUTION	Barge 243	ALASKA STANDARD	ARCO ANCHORAGE	
	AUSTIN	Barge 246	ANTONE F.	ARCO CALIFORNIA	
	AVILA	Barge 255	ARCO ENDEAVOR	ARCO FAIRBANKS	
	BALD BUTTE	Barge 3	ARCTIC CHALLENGER	ARCO INDEPENDENCE	
	BANDON	Barge 31-500	Barge 10	ARCO JUNEAU	
	Barge 10	Barge 4	Barge 4	ARCO SAG RIVER	
	Barge 11	Barge 5	Barge 550	ARCO SPIRIT	
	Barge 12	Barge 505	Barge 551	ARCO TEXAS	
	Barge 14	Barge 509	Barge 700	ATIGUN PASS	
	Barge 288	Barge 513	Barge 701	Barge 419	
	Barge 4	Barge 513 (Pacific)	Barge DTB 40	Barge DBT 40	
	Barge 5	Barge 535	Barge DTB 48	Barge ZB 304	
	Barge 551	Barge 536 (Pacific)	CALIFORNIAN	BAY RIDGE	
	Barge 552	Barge 538 (Pacific)	CHARLES LYKES	BEAVER STATE	
	Barge 553	Barge 542	CHEVRON ARIZONA	BROOKLYN	
	Barge 6	Barge 550	CHEVRON LOUSIANA	BROOKS RANGE	
	Barge 602	Barge 6	CHEVRON MISSISSIPPI	BT ALASKA	
	Barge 7	Barge 7	CHEVRON WASHINGTON	BT SAN DIEGO	
	Barge 702	Barge 71	COLUMBIA	CALIFORNIAN	
	Barge 72	Barge 743	CORNUCOPIA	CELJE	
	Barge 8	Barge 8	COVE LEADER	CHAVEZ	
	Barge 9	Barge 9	DEFENDER	CHEVRON CALIFORNIA	
	Barge CML 10	Barge APL 46	ESSAYONS	CHEVRON COLORADO	
	Barge DB 10	Barge DTB 40	EXXON GALVESTON	CHEVRON HAWAII	
	Barge SS 5	Barge SS 9	FORT WORTH	CHEVRON MISSISSIPPI	
	Barge YB 38	Barge YB 38	FURSMAN	COMET	
	Barge ZBD 260	BEAVER	GOLIATH	EAGLE I	
	BEAVER	BOHEMIA	HAAKON	EXXON BATON ROUGE	
	BIDDLE	CASEY JEAN	HARDING	EXXON BENICIA	
	BIG BOB	Cat Barge	HAWAII	EXXON JAMESTOWN	
	Big Digger Barge	CLEARWATER	HOUSTON	EXXON NEW ORLEANS	
	CASCADE	COLUMBIA	INLAND CHIEF	EXXON NORTH SLOPE	
	CERES	Dump Scow	KONA	EXXON PHILADELPHIA	
	CHAMPION	FISHER	MAUNALEI	EXXON SAN FRANCISCO	
	COLUMBIA	HENRY SAUSE	MING WINTER	EXXON WASHINGTON	
	DERRICK HAASON	JUPITER	MISSION SANTA CLARA	GLACIER BAY	
	DIANE FOSS	LASSEN	MOBIL MERIDIAN	GLORY RIVER	
	DUTTON	MANA	MOBILOIL	GOLDEN ENDEAVOR	

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock 1	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Dillingham Ship Repair (continued)	EAGLE I	MCNAUGHTON	MOLOLO	GOLDEN GATE	
	EL CENTRO AMERICANO	MINK	MYERS	GRAND CANYON STATE	
	FRIENDSHIP	MIZAR	OCEAN BEAUTY	HESS	
	GRIZZLY	MOANO PAHU	OREGON	INDEPENDENCE	
	HERO	NORTON SOUND	PECOS	JINKAI MARU	
	HUNTER	OSKI	POLAR SEA	KAUAI	
	INVADER	PACIFIC	POTOMAC TRADER	KENAI	
	IVER FOSS	SAMPSON	PRESIDENT ADAMS	KEYSTONE CANYON	
	LION OF CALIFORNIA	SEAL	PRESIDENT JACKSON	LOMPOC	
	MARY ALYCE	SENECA	PRESIDENT TAYLOR	LURLINE	
	MATANUSKA	SIOUSON	PRESIDENT WILSON	MALOLO	
	MCCURDY	SIOUX	S.O. BLAND	MANUKAI	
	MINX	SURFER	SANTA CLARA	MANULANI	
	MOANO HOLO	TYEE	SANTA PAULA	MAUNALEI	
	NAVIGATOR	UMPQUA	SINCLAIR TEXAS	MAUNAWILI	
	NEWPORT	W.L. WILLIAMS	SOUTHERN CROSS	MOBIL ARCTIC	
	OREGON	WHITNEY	STUYVESANT	MOBILOIL	
	PACIFIC CARRIER	WILLAMETTE PILOT	TYEE	NEW YORK	
	PADRE ISLAND		VANGUARD	OAHU	
	PAN PACIFIC		WILKES	OGDEN HUDSON	
	PRESIDENT TAYLOR		YAQUINA	OGDEN YUKON	
	RESOLUTE			OMI COLUMBIA	
	SALVAGE CHIEF			OREGON	
	SENECA			OVERSEAS BOSTON	
	SIOUX			OVERSEAS JUNEAU	
	T.T. AMERICA			PECOS	
	TOTEM			PHILADELPHIA SUN	
	TRINIDAD HOUSTON			PHILLIP F.	
	TYEE			PLUTO	
	UMPQUA			POTOMAC	
	WAHKIAKUM			PRESIDENT ADAMS	
	WARRIOR			PRESIDENT FILLMORE	
	WESTERN COMET			PRESIDENT JACKSON	
	WILLAMETTE CHAMPION			PRESIDENT POLK	
	WILLAMETTE PILOT III			PRESIDENT TAFT	
	YAQUINA			PRESIDENT WILSON	
				PRINCE WILLIAM	
				PRINCE WILLIAM SOUND	
				RATNA KIRTI	
				SALVAGE CHIEF	
				SANTA PAULA	
				SHOSHONE	
				SISTER KATINGO	
				SOHIO INTREPID	
				SOHIO RESOLUTE	
				STUYVESANT	
				THOMPSON PASS	
				YAQUINA	
				YFD-69	
				Z BIG ONE	

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Floating Marine Ways	Barge 1	Barge 207			CHINOOK
	Barge 32	Barge 29			Dry Dock Pontoon
	Barge 70	TYEE			FRANK M. WARREN
	Barge MP 2	WESTERN COMET			MANZANILLO
	Barge ST 3	WESTERN METEOR			
	WESTERN COMET	WESTERN SUN			
FMC Corporation	ALASKA		Barge ST 35	Barge 312-1 (Pacific)	
	Barge 5		ISLA BONITA	Barge 500-4	
	Barge 553		MALOLO	Piggy Back Unit	
	Barge 1002		TOTEM	Barge 450-6	
			Barge 450-9		
General Construction		Barge 1	Barge 1		
			Barge 2		
General Steamship Corp.					ARCO SPIRIT
					ISLAND ENGINEER
Gunderson Bros. Engineering		FS-344			
Hickey Marine					SEA LION
Knappton		AWA			
		OREGON			
L&S Marine	Barge KW 252		IRIS		
	Barge KW 3		OREGON		
	Barge WT 25		PETER J. BRIX		
	Barge WT 66				
	CLEARWATER				
	Float Pipe				
	RIVER QUEEN				
	Barge KC18				
	WILLAMETTE EAGLE				
	WESTERN COMET				
	WESTERN METEOR				
	WHITEBUSH				
Lockport Marine	GLACIER		Barge 700	OREGON	SEA-LAND HAWAII
			Barge 710		
			FORT FISHER		
Mar Corn	WILLAPA	PACIFIC			
Marine Ways Corp.	Barge 23	ATLAS	Barge LSM 209		
	Barge 26	Barge (APL)	GOLIATH		
	Barge 313	Barge 303	MONTICELLO		
	Barge 67	Barge 308	SEASPAN 241		
	Barge 71	Barge 4			
	Barge CZ 3	Barge 422			
	Barge SDS 2	Barge 428			
	BIDDLE	Barge 6			
	CALHOUN	Barge KT 21			
	CLARKSTON	Barge KW 1 (OIL QUEEN)			

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Marine Ways Corp. (continued)	CLEO BRUSCO	Barge LSM 204			
	LOFGREN	Barge LSM 252			
	MCCURDY	Barge SDS 1			
	NOYDENA	Barge ZB 301			
	OREGON	BETSY L.			
	PAPOOSE	CLARKSTON			
	PETER J. BRIX	FRIENDSHIP			
	SHAVER	GREEN GIANT			
	WESTERN COMET	IRONWOOD			
	WESTERN METEOR	LEWISTON			
		LSM Hull			
		LST 201			
		MIDWAY ISLAND			
		OLLIE RIEDEL			
		OREGON			
		SAMPSON			
		VULCAN			
		WILLAMETTE MARINER			
		WILLAMETTE PACIFIC			
		WILLAMETTE PILOT			
		WILLAMETTE PILOT #3			
Military Sealift Command					TENACIOUS
Northwest Marine Iron Works	ALASKA STANDARD	BANNOCK	ACADIAN MARINER	ADMIRALTY BAY	SEA-LAND HAWAII
	AVILA	Barge	ALASKA	ARCO ANCHORAGE	ALKAID
	BANDON	Barge 600	ARCTIC PROVIDER	ARCO FAIRBANKS	Barge 547
	Barge 318	Barge 608	ASIA 15	ARGYLL	CHRIS
	Barge 4	Barge APB 36	ATLAS CHALLENGER	ASPEN	MINK
	Barge 405	Barge Cascade 21	AVILA	ATIGUN PASS	Barge APL 4
	Barge 410	Barge Cascade 22	Barge (Riedel)	BALTIMORE TRADER	DE WEISS
	Barge 419	Barge KT 3	Barge 3	Barge 313	SHEARWATER
	Barge 553	Barge ST 20	Barge 536	Barge 431	SKAW PRINCESS
	Barge 6	Barge ST 30	Barge 702	Barge 44307	MOUNT WASHINGTON
	Barge 7	Barge ST 31	Barge 703	Barge HSTC 1	BROOKS RANGE
	Barge 700	Barge ST 32	Barge KC 251	Barge I 51	EXXON BENICIA
	Barge BM 21	Barge ST 38	Barge ST 13	Barge KSC 700	Barge APL 4
	Barge Sause 12	Barge ZB 105-A	Barge ST 43	Barge SS 16	Barge ST 40
	Barge SD5 1	BRANDY BAR	Barge ST 48	Barge TMS 2	BT ALASKA
	Barge ST 30	CHARLES CROCKER	Barge UMTB 332	Barge ZB 304	KEYSTONE CANYON
	Barge ST 31	CLARKSTON	Barge ZB 304	BIG BOB	STANDLEY
	Barge ST 38	CLEARWATER	Barge ZPC 401	BROOKS RANGE	TAZLINA
	Barge ZB 285	COLUMBIA	BIDDLE	BT ALASKA	YAMAMIYA MARU
	Barge ZB3 103	COMET	BOBBIE JEAN	BT SAN DIEGO	
	BIDDLE	COMMANCHE	BUNGA MELAWIS	BUILDER	
	BISMARK	DOUGLAS FIR	CAPE EDMONT	CAPE EDMONT	
	BOBBIE JEAN	EQUINOX	CHETCO	CERES	
	CASCADE	FRIENDSHIP	CHEVRON ARIZONA	CHEHALIS	
	CERES	GEORGE BIRNIE	CHEVRON OREGON	CHESTNUT HILL	

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Northwest Marine Iron Works (continued)	CHEHALIS	HAWAII	CLARKSTON	CHEVRON ARIZONA	
	CHEPACHET	HEDGES	CLEARWATER	CHEVRON CALIFORNIA	
	CHINA VICTORY	JOE SAUSE	COAST RANGE	CHEVRON COLORADO	
	CHINOOK	LASSEN	COLONIAL EXPLORER	CHEVRON MISSISSIPPI	
	CIGALE	LEWISTON	COLUMBIA	CHEVRON WASHINGTON	
	CLARKSTON	LSM Hull 542	CORNUCOPIA	COAST RANGE	
	CLEARWATER	MARINER	CUSHING	CONSTITUTION	
	COLUMBIA	MCNAUGHTON	ELERANTA	CORNUCOPIA	
	DIANA B	MEYERKORD	EXXON GALVESTON	COVE LIBERTY	
	DULUTH	MORNING STAR	F.J. SUPER FRAN BRADACH	DAWN	
	EL CENTRO AMERICANO	NEZ PERCE	F.S. BRYANT	DIAN	
	ELISA	OSCEOLA	HILLYER BROWN	DIANA SKOU	
	FIERCE CONTENDER	PACIFIC	HOUSTON	DULUTH	
	FORT WORTH	PETER W.	INGER	ESSAYONS	
	FRISCO	R. GUIDRY	KINKO MARU	EUROASIA CONCORDE	
	GREEN RIDGE	ROBERT GRAY	KONA	EXXON BATON ROUGE	
	HAMNER	RONDYS	LION OF CALIFORNIA	EXXON BENICIA	
	HARDING	SIUSLAW	LOMPOC	EXXON GALVESTON	
	HEDGES	TIGER	MAINE	EXXON HOUSTON	
	HENRY SR.	TYEE	MALLORY LYKES	EXXON JAMESTOWN	
	HERCULES	VALIANT	MARIA L	EXXON NEW ORLEANS	
	HOUSTON	WILLIAMS	MIAMI	EXXON NORTH SLOPE	
	INGER	YAKIMA	MICHIGAN	EXXON PHILADELPHIA	
	KLAMATH		MOBILOIL	EXXON SAN FRANCISCO	
	KOREAN SAPPHIRE		MOKU PAHU	FAIR PRINCESS	
	LION OF CALIFORNIA		MONTANA	GLACIER BAY	
	LOMPOC		MONTEREY	GOLDEN GATE	
	MALASPINA		NECANICUM	HEDGES	
	MATANUSKA		NEHALEM	HYUNDAI #11	
	MCNAUGHTON		NESTUCCA	HYUNDAI CON 6	
	MILLICOMA		OBSERVATION ISLAND	INDEPENDENCE	
	MUD		OCEAN PHOENIX	KAWISHIWI	
	NEAHKANIE		OKINAWA	KEYSTONE CANYON	
	NORTHERN LIGHT		OVERSEAS ROSE	KITTANING	
	OREGON		PACIFIC PRINCESS	MAIZURN MARU	
	PALAWAN ISLAND		PAUL FOSTER	MANHATTAN	
	PETER S. HASS		PENNSYLVANIA TRADER	MARYLAND	
	PETER W.		POINT LOMA	MERCY	
	POLYNESIA		POLAR SEA	MIDWAY	
	PORTLAND		POLAR STAR	MOBIL ARCTIC	
	PRINCE GEORGE		PRESIDENT ADAMS	MOBIL MERIDIAN	
	PROGRESS		PRESIDENT JACKSON	NEHALEM	
	QUINALT		PRINCE OF TOKYO	NIEUW AMSTERDAM	
	RAMPANT		RIVERHEAD SPIRIT	NOORDAM	
	RAVEN		SANTA CLARA	OMI COLUMBIA	
	ROUGE		SHOSHONE	OREGON	
	ROYAL VENTURE		SIERRA MADRE	OVERSEAS BOSTON	
	SENECA		SIOUX	OVERSEAS JUNEAU	
	SHAVER		SKAW PRINCESS	PETERSBURG	

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Northwest Marine Iron Works (continued)	SIEGFRIED TIGER		SKIPANON	PRESIDENT TAYLOR	
	SKIPANON		STAR CENTAURUS	PROTECTOR ALPHA	
	STALWART		SUNNY PIONEER	ROSE CITY	
	STAR K		TAI LUNG	ROTTERDAM	
	STEIN		TEXACO MINNESOTA	SAGAFJORD	
	STORIS		TEXACO NEW JERSEY	SANSINENA	
	TAKU		TONQUIN	SANSINENA II	
	TAZLINA		TOYOTA MARU	SIERRA MADRE	
	TENACIOUS		TYEE	SIUSLAW	
	TEXACO NEW JERSEY		VEENDAM	SOHIO RESOLUTE	
	TRANSOCEANIC		WASHINGTON STAR	STAR MALAYSIA	
	TUSTUMENA		WILLAPA	STORIS	
	TYEE		WILSON	STUYVESANT	
	VAN NUYS		WOERMANN MERCUR	THOMPSON PASS	
	VANCOUVER (ex BENJAMIN		WYOMING	TONSINA	
	WASHINGTON			TROPICALE	
	WILLAPA			WESTERDAM	
	WYMAN				
	YAQUINA				
	ZAG 501				
PAC-ATL	CLACKAMAS				
Pacific Marine	PACIFIC TRADER (former Audrey	JAMES LICK			MONTROSE
					ARD 30
					DOROTHY STEVENSON
					Barge PAC 302-2
Port of Portland		W.L. WILLIAMS			CLACKAMAS
Portland Shipbuilding Co.		Barge 99			Barge 115
Riedel	HERCULES	Barge SS 5	Barge 303		
	Liberty Hull	CALHOUN	POLHEMUS		
	MCCURDY	FRIENDSHIP			
	Piggy Back	WESTERN METEOR			
	Piggy Back I	WILLAMETTE TIGER			
	Piggy Back II				
	POLLY B.				
	WILLAMETTE PILOT				
Schnitzer	Barge SS 7	Barge (APL)	Dock Unit	Dock Unit	
	Dry Dock Unit	Barge WT 1	Liberty Dry Dock	Liberty Hull Dock	
	Liberty Hull		Liberty Hull Dock	Piggy Back Unit	
	Piggy Back Unit		Piggy Back Unit		
	Ship Hull				
Sea-Land Services, Inc.					SUMMIT
Tidewater	Barge 33				
	CAPTAIN VAN NESS				
	DEFIANCE				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Willamette Western	Barge	Piggy Back Unit #1	Barge 303		
	FOSS	Piggy Back Unit #2	Piggy Back Unit		
	OLLIE RIEDEL				
	Piggy Back Unit				
WISCO	LPD DUBUQUE	Barge 552	CHEVRON COLORADO	CHEVRON ARIZONA	JAPAN MAIL
	MATANUSKA		CHEVRON OREGON	CHEVRON COLORADO	
	WINSTON		GAFFEY	GLOMAR EXPLORER	
			LPD JUNEAU	KEYSTONE CANYON	
			MT. VERNON		
			OGDEN		
			POINT DEFIANCE		
			SANTA RITA		
West State, Inc.	ALASKAN PRIDE		Barge 396	ARCO ANCHORAGE	AMERICA
	Barge 405		Barge BMC 202	ARCO CALIFORNIA	AMERICAN EMPRESS
	Barge 410		CAPE BORDA	ARCO TEXAS	AMERICAN MERLIN
	Barge BMC 29		CAPE BRETON	ATIGUN PASS	ARCO CALIFORNIA
	Barge BMC 30		CHEVRON ARIZONA	Barge 261	ATIGUN PASS
	Barge BMC 31		CHEVRON COLORADO	Barge HSTC 1	Barge BMC 29
	Barge BMC 32		CHEVRON WASHINGTON	Barge KC 15	Barge BMC 32
	Barge BMC 36		CORNUCOPIA	Barge ZB 304	BETSEY L
	Barge BMC 410		CURY	BLUE RIDGE	BLUE RIDGE
	Barge KC 32		ESSAYONS	BROOKS RANGE	BT ALASKA
	BISMARK		ESTHER LOUISE	BT ALASKA	C. NORFAN
	CERES		GREEN MOUNTAIN STATE	CHESAPEAKE	CAPE BLANCO
	CHEVRON CALIFORNIA		LUBE QUEST	CHESAPEAKE TRADER	CAPE FEAR
	HELEN G.		MOLOKAI	CHEVRON CALIFORNIA	CASCADE
	LEWISTON		NEPTUNE	CHEVRON COLORADO	CHEVRON ARIZONA
	LION OF CALIFORNIA		OVERSEAS PHILADELPHIA	CHEVRON LOUSIANA	CHEVRON CALIFORNIA
	PAUL BUNYON		POLAR STAR	CHEVRON MISSISSIPPI	CHEVRON COLORADO
	SALVAGE CHIEF		PORT ANGELES	CHEVRON OREGON	CHEVRON LOUISIANA
	SITKA		SILAS BENT	CURTIS	CHEVRON MISSISSIPPI
	STEAMER PORTLAND		TEXACO RHODE ISLAND	DELAWARE TRADER	CHEVRON OREGON
	T.T. AMERICA		UTRILLO	ESSAYONS	CHEVRON WASHINGTON
	TOTEM		YAQUINA	EXXON BAYTOWN	CHIEF
	TRIUMPH			EXXON BENICIA	CONSTELLATION
	VULCAN			EXXON LONG BEACH	CORNUCOPIA
	YAQUINA			EXXON NORTH SLOPE	DELAWARE TRADER
				EXXON SAN FRANCISCO	ESSAYONS
				EXXON VALDEZ	EXXON LONG BEACH
				EXXON WASHINGTON	HORNET
				GOLDEN BEAR	KENAI
				GRAND CANYON STATE	KEYSTONE CANYON
				GREEN MOUNTAIN STATE	KEYSTONER
				H.H. HESS	LION OF CALIFORNIA
				HAWAII	LONG LINES
				KEYSTONE CANYON	LURLINE
				LIBERTY SEA	MERCURY
				LUBE QUEST	MORMACKSY
				LURLINE	NAVASOTA

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
West State, Inc. (continued)				MARYLAND	OMI COLUMBIA
				MOKU PAHU	OVERSEAS BOSTON
				NEPTUNE	OVERSEAS OHIO
				OMI COLUMBIA	PACIFIC ROSE
				OVERSEAS JOYCE	PACKING
				OVERSEAS JUNEAU	PACPRINCE
				OVERSEAS WASHINGTON	PACPRINCESS
				SEA-LAND ANCHORAGE	PORTLAND
				SILAS BENT	PRINCE WILLIAM SOUND
				STRONG VIRGINIAN	RESOLUTE
				TEXACO CONNECTICUT	SAMUEL ARMACOST
				THOMPSON PASS	SEA-LAND TACOMA
				TONSINA	STAR MASSACHUSETTS
				YAQUINA	STAR MONTANA
				Z BIG ONE	TACOMA
					TEXACO FLORIDA
					THOMPSON PASS
					TIPPECANOE
					VULCAN
Zidell	OLLIE RIEDEL	Barge 43	Barge 270	Barge ZB 32	
	TYEE	Barge ZB 42	Barge ZB 32	Barge ZB 34	
			Barge ZB 34	HARDING	
			Piggy Back Unit	Piggy Back Unit	
Not currently known	A.C. RUBEL	ADMIRAL DEWEY	ACHILLES	A.J. HIGGINS	ADMIRALTY BAY
	ALAN SEEGER	AFOUNDRIA	ALASKAN MAIL	ADMIRALTY BAY	ADVENTURER
	ALASKA	AGIOI VICTORES	AMERICAN MAIL	ARCO FAIRBANKS	AGIA DYNAMIS
	ALASKA STANDARD	AGOR #12	ARCTIC CHALLENGER	ARCO SAG RIVER	ALASKA
	ALEXANDER WHITE	AGOR #13	ARGYLL	ARCO SPIRIT	ALASKA JEWEL
	ALFRED VICTORY	AKL 10 SHARPS	ARIZONA	ARCTIC CHALLENGER	ALASKAN JEWEL
	ALLEGHENY VICTORY	AKL 2	ARLINGTON	AUSTRAL RAINBOW	ALBERT J. MEYER
	ALLEN C. BALCH	AKL 35	ATLANTIC ENDEAVOR	Barge KSC 700	ALBERT M. BOE
	ALMA VICTORY	ALAMEDA	ATLANTIC ENG.	BT ALASKA	ALDEN W. CLAUSEN
	ALSEA	ALAN SEEGER	ATLANTIC TRADER	BT SAN DIEGO	ALEXANDRA V
	AMERICAN FALCON	ALASKA STANDARD	AUSTIN	Catamaran Hull	ALLEN C. BALCH
	AMERICAN MAIL	ALCO PIONEER	AVILA	CHEVRON OREGON	ALSEA
	AMERICAN ROBIN	ALGONQUIN	Barge 336-2	CHEVRON WASHINGTON	AMERICA
	AMMONIA MARINER	AMERICAN EAGLE	Barge 408	DELAWARE TRADER	AMERICAN EMPRESS
	AN 6	AMERICAN MAIL	Barge 411 (hull)	DENALI	AMERICAN MAIL
	ANDROMACHI	AMMONIA MARINER	Barge 414	ESSAYONS	AMERICAN MERLIN
	ANNA BAKKE	AN 12	Barge 415-414	EXXON NORTH SLOPE	AMERICAN VETERAN
	ANNISTON	AN 15	Barge 552	GOLD BOND CONVEYOR	AQUA MARINE 242
	ARCADIA VICTORY	AN 24	Barge 570	GOLDEN GATE	ARCO ALASKA
	ARIZONA	AN 26	Barge 74	KLAMATH	ARCO ANCHORAGE
	ARL 24	APACHE	Barge PAC 441	MANUKAI	ARCO CALIFORNIA
	ARL 30 ASKARI	ARANSAS PASS	Barge ST 37	MAURY	ARCO INDEPENDENCE
	ARLINGTON	ARD 30	BELL OCEAN	MOBIL ARCTIC	ARCTIC COUNSELOR
	Army Derrick Barge BD6237	ARGOSY	BIDDLE	NESTUCCA	ARION
	ARTHUR FOSS	ARIZONA	BOBBIE JEAN	NIEUW AMSTERDAM	ARIZONA
	ASBURY VICTORY	ATA 174	BRITISH BEACON	OVERSEAS JUNEAU	ASPEN

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	ATA 192	ATA 174 WATEREE	BUCKEYE STATE	SANSINENA II	ASSERTIVE (T-AGOS 9)
	ATLANTIC BREEZE	ATA 192	CALIFORNIA	SEA-LAND HAWAII	ATIGUN PASS
	ATLANTIC CAPTAIN	ATA 241	CANTERBURY FALCON	SEA-LAND PACIFIC	ATLANTIC FORREST
	AUDREY	ATA 242	CAPE GRENVILLE	STORIS	Barge (Tidewater)
	AUDREY 11	ATA 243	CATAWBA FORD	XAUAI	Barge 102
	AUGUSTIN DALY	AVILA	CHARLES E. DANT	YAQUINA	Barge 11
	AUSTIN	AXIOS	CHEVRON ARIZONA		Barge 116
	AVILA	BALTIMORE TRADER	CHEVRON COLORADO		Barge 202
	B.F. IRVINE	BANDON	CHEVRON LOUSIANA		Barge 400-Z
	BALTIMORE TRADER	BANNOCK	CHEVRON OREGON		Barge 416
	BANDON	Barge 105	CHEVRON WASHINGTON		Barge 419
	BANNOCK	Barge 1332	COAST RANGE		Barge 44307
	BARBARA	Barge 14	COLUMBIA		Barge 450-8
	BARBARA OLSON	Barge 143	COQUILLE		Barge 5
	Barge (LSM) W.T. & B. Co.	Barge 15	CORAL STONE		Barge 702
	Barge 1002	Barge 174	DAIKEI MARU		Barge 71
	Barge 108	Barge 24	DAVID E. DAY		Barge AFDB 4
	Barge 116	Barge 26	DIANNA		Barge APB 36
	Barge 12	Barge 27	ECLIPSE		Barge BMC 18
	Barge 13	Barge 279	F.N.V. ISERE		
	Barge 14	Barge 28	FOSTER CITY		
	Barge 15	Barge 280	GAINES MILL		Barge BMC 37
	Barge 174	Barge 29	GENERAL H.H. ARNOLD		Barge BMC 38
	Barge 2	Barge 3	GENERAL LEROY ELTINGE		Barge BMC 9
	Barge 217	Barge 30	GOLDEN GATE		Barge KC 1
	Barge 23	Barge 303	GREATLAND		Barge KSC 700
	Barge 25	Barge 33.500.0	HACHIBANA		Barge LCU 1648
	Barge 250	Barge 36	HARDING		Barge MLC 261
	Barge 26	Barge 37.500	HARRY LUNDEBERG		Barge SS 9
	Barge 28	Barge 4	HASSAYAMPA		Barge ST 13
	Barge 312-1	Barge 41	HAWAII		BARNARD VICTORY
	Barge 33	Barge 5	HONG KONG MAIL		BAY RIDGE
	Barge 34500	Barge 502	HOUSTON		BENJAMIN CHEW
	Barge 4	Barge 507	HOYT S. VANDENBERG		BERMUDA STAR
	Barge 406	Barge 508	Hull of C-2		BIDDLE
	Barge 409	Barge 509	ILLINOIS		BLUE RIDGE
	Barge 44	Barge 510	INDIAN MAIL		BLUEBACK
	Barge 526	Barge 52	INGER		BOBBIE JEAN
	Barge 527	Barge 527	ISERA		BROOKS RANGE
	Barge 536	Barge 548	ISLE DEL SOL		BT ALASKA
	Barge 542	Barge 551	JAPAN JUNIPER		BT SAN DIEGO
	Barge 6	Barge 552	JAPAN LAUREL		BULWARK
	Barge 7	Barge 560	JAPAN MAIL		CABLE VENTURE
	Barge 77	Barge 6	JEANNIE		CALIFORNIA MAIL
	Barge 81	Barge 6239	JULESBERG		CANVASBACK
	Barge 814	Barge 6476	KALOLO (MALOLO?)		CAPE BOVER
	Barge APB 40	Barge 77	KETCHIKAN		CAPE BRETON
	Barge APL 55	Barge 78	KISMET		CAPE EDMONT
	Barge BC 277	Barge 80	KOREAN MAIL		CAPE ISABEL

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	Barge BD 2845	Barge 801	KYOTO FOREST		CAPTAYIANNAS
	Barge BD 482	Barge 803	LESLIE LYKES		CASCADE
	Barge BG 6085	Barge 806	Liberty Dry Dock		CAVALIER
	Barge BG 6238	Barge APB 46	Liberty Hull		CENTURY
	Barge BG 6386	Barge APL 14	Liberty Hull Dock		CERES
	Barge BMC 36	Barge B29.200W	LOS ANGELES		CHEROKEE
	Barge BMC 37	Barge BC 2127	LPD DUBUQUE		CHESAPEAKE
	Barge BR 6438	Barge BC 2817	LSM Barge #ST-30		CHESTER HARDING
	Barge CCM-21	Barge BD 1069	LSM Hulls (2)		CHESTNUT HILL
	Barge Ck. 2	Barge BG 6216	LST Barge		CHETCO
	Barge F 100	Barge CCM-21	LST Hull		CHEVRON COLORADO
	Barge GC 26	Barge Ck. 2	LUMBER QUEEN		CHEVRON LOUSIANA
	Barge HTB 204	Barge FS 344	M.M. DANT		CHEVRON MISSISSIPPI
	Barge HTB 25	Barge LSM 174	MARCONAFLO MERCHANT		CHEVRON NEW ORLEANS
	Barge LSM 27	Barge LSM 467	MARIA PUBICON		CHEVRON WASHINGTON
	Barge PAC 312-1	Barge MM 240	MARINE BOSS		CLEVELAND
	Barge PAC 312-2	Barge PGE 12	MATANUSKA		COAST RANGE
	Barge PS 108	Barge PS 81	MCCURDY		COEN
	Barge PS 77	Barge PS 91	MEADOWBROOK		COLUMBIA
	Barge PS 81	Barge ST 3	MERCURY		COLUMBIA BANKER
	Barge R-21	Barge ST 31	MERRIMAC		COMET
	Barge S/S-1	Barge USAS-U-30-1478	MILL SPRING		COMMANDER
	Barge ST 42	Barge W.T. & B. Co.	MOBIL ARCTIC		CONSTITUTION
	Barge YD 60	Barge YD 225	MOBILOIL		CORNUCOPIA
	Barge YFN 974	Barge YFN B10	MONTPELIER VICTORY		COTTON STATE
	Barge ZB 204	Barge ZB 101-F	MORMACREY		COVE ENDEAVOR
	Barge ZB 285	Barge ZB 108-F	MT. HOOD		COVE LEADER
	Barge ZB 301	BEAVER	MT. VERNON		COXCOMB
	Barge ZB 302	BEAVER STATE	MT. VERNON VICTORY		CRUSADER
	Barge ZBD 260	BETSY L	NAECO		CRYSTAL CLIPPER
	BARNARD VICTORY	BIDDLE	NEDER ELBE		CRYSTAL VIKING
	BATTLE CREEK VICTORY	BIENVILLE	NEGO ANNE		DANIEL MATHANY
	BAYLOR VICTORY	BIG MOOSE	NESTUCCA		DANSUS
	BEDFORD VICTORY	BLACK FISH	Net Tender		DAUNTLESS
	BENJAMIN CHEW	BLUE BELL	NEW ORLEANS		DAVID E. DAY
	BEREA VICTORY	BLUESTAR	OREGON		DELAWARE TRADER
	BETSY L	BRIGHTSTAR (Kronos)	OREGON MAIL		DENALI
	BEYLA	BUCKEYE STATE	OVERSEAS REBECCA		EDWARD FILENE
	BIDDLE	CALIFORNIA	OVERSEAS ULLA		EDWARD N. HURLEY
	BIG Z	CAPT. GEORGE	OVERSEAS VALDEZ		ESSAYONS
	BLACK PRINCE	CAPT. LEW RUSSELL, JR.	PACIFIC COURIER		EVIBELLE
	BLUE BELL	CAPT. VAN NESS	PARAGON		EXXON 50
	BLUE WATER	CARRIER DOVE	PARVATI		EXXON BATON ROUGE
	BLUEGRASS STATE	CASCADE	PECOS		EXXON BENICIA
	BLUESTAR	CAYUSE	PERMANENTE SILVERBOW		EXXON JAMESTOWN
	BOBBIE JEAN	CEDAR	PETRO QUEEN		EXXON LONG BEACH
	BOY	CHARLES CROCKER	PHILIPPINE MAIL		EXXON NEW ORLEANS
	BUNKER HILL	CHARLES E. DANT	PHILLIPS CALIFORNIA		EXXON NORTH SLOPE
	BURCO TRADER	CHEROKEE	Piggyback Unit		EXXON PHILADELPHIA

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	BURRARD	CHEVRON	PORTLAND		EXXON SAN FRANCISCO
	C TRADER (likely COLUMBIA	CHIEF	PRESIDENT FILLMORE		F.E. WEYERHAEUSER
	CALIFORNIA	CHINA MAIL	PRESIDENT MCKINLEY		F.J. SUPER FRAN BRADACH
	CANADA MAIL	CHINOOK	PRODUCER		FS-210
	CAPT. N.B. PALMER	CLACKAMAS	REBECCA		GALENA BAY
	CAPTAIN BOB	CLEARWATER	REDSTON		GEORGE BIRNIE
	CAPTAIN GEORGE	COASTAL NOMAD	RENAISSANCE		GEORGE F. PATTEN
	CAPTAIN LEW RUSSELL JR.	COLINA	RICHARD		GEORGE WALTON
	CAPTAIN N.B. PALMER	COLORADO	ROANOKE		GILIA
	CAPTAIN THEO	COLUMBIA	SABINE		GLACIER BAY
	CARLETON VICTORY	COLUMBIA QUEEN	SAMUEL GOMPER		GLADIATOR
	CASCADE	COLUMBIA TRADER	SAN ANTONIO		GLEN
	CATAWBA FORD	COOS	SAN FRANCISCO		GLOBAL SENTINEL
	CCNY VICTORY	COSSATOT	SAN JUAN		GODFATHER
	CHARLES C. DUNAIF	COTTON STATE	SANSINENA		GOLD BOND CONVEYOR
	CHARLES CROCKER	COWLITZ	SANTA ANA		GREEN HARBOUR
	CHARLES E. DANT	Crowley #254	SANTA CLARA		GREEN MOUNTAIN STATE
	CHEPACHET	DALLES	SANTA PAULA		GREEN VALLEY
	CHESTER HARDING	DAVISON	SEA-LAND PRODUCER		GROVE CITY VICTORY
	CHINA MAIL	DE ETTA	SEATTLE		GUARDIAN
	CHINA VICTORY	DEL NORTE WOODSMAN	SENYO MARU		GUARDSMAN
	CHOCTAW	DENISE	SHAVER		H.H. RAYMOND
	CITRUS PACKER	Derrick Barge	SHERBURNE (victory)		HAMILTON VICTORY
	CLARKSBURG VICTORY	Derrick Barge #2	SIERRA MADRE		HANZA DANZIG
	CLEARWATER	DONALD A. DAVISON	SILAS BENT		HARPERELY
	CLYDE L. SEAVEY	EDGAR F. LUCKENBACH	SINCLAIR TEXAS		HAWAII
	COASTAL NAVIGATOR	EDISON MARINER	SISTER KATINGO		HAWAIIAN
	COASTAL NOMAD	ELSIE (ex. LCI 814)	STEEL ARCHITECT		HAWAIIAN CITIZEN
	COASTAL SENTRY	ENTERPRISE	STEEL SEAFARER		HEDGES
	COLINA	EXPRESS	TAZLINA		HELEN H.
	COLUMBIA	F.E. WEYERHAEUSER	TEXACO ANACORLES		HENRY K. KAISER
	COLUMBIA TRADER	F.J. LUCKENBACH	TEXACO GEORGIA		HENRY SAUSE
	COOPER UNION VICTORY	FISCHER	TEXACO MINNESOTA		HERCULES
	COOS	FOREBODY	TITAN		HIGHLANDER
	COTTON STATE	FRANCES	TITUS		HORACE IRVING
	COUNCIL BLUFFS VICTORY	FRANCIS	TONQUIN		HOUSTON
	Crane Barge Gov.	FRIBOURG TRADER	TRANSMALAYA		HUGH M. SMITH
	D.B. VULCAN	FRISCO	UNTER DENLINDER		HUMBOLDT
	D.D BRAINE	FS 211	VICTORY		INLAND CHIEF
	D.D. ORLECK	FS 344	WALTER RICE		IRAN VICTORY
	D.E. 788	GEO. S. LONG	WASHINGTON		ISLA BONITA
	D.E. LIND	GEORGE BIRNIE	WASHINGTON MAIL		IX 503
	DAVISON	GEORGE LUCKENBACH	WYOMING		J. RUFINO BARRIOS
	DEBBIE TEAR	GEORGE M. BROWN	XILAS		JAVA MAIL
	DEFENDER	GERONIMO	YAQUINA		JOHN A. CAMPBELL
	DEKESAN	GO GETTER	YUKON		JOHN DOCKWEILER
	DEL NORTE WOODSMAN	GOLDEN STATE	ZIDELL'S DELIGHT		JOHN ERICSSON
	DENISE	GOLIATH			JOHN FAIRFIELD
	Derrick Barge	GREENSTAR			JOHN HATHORN

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	Derrick Barge 6655	HAI CHANG			JOHN MURRAY FORBES
	DIANNA	HARDING			JOHN OWEN
	DONG HAE	HARRY LUCKENBACH			JOSEPH SQUIRES
	Dry Dock Unit	HAWAIIAN LOGGER			JULESBURG
	EAGLE COURIER	HELEN STEVENSON			KAMAHI
	EDWARD LUCKENBACH	HENRY FOSS			KAWISHIWI
	EDWIN ABBEY	HOLYSTAR			KEITH
	EDWIN MARKHAM	HUMBOLDT WOODSMAN			KENAI
	EIRINI L.	INDIA MAIL			KENNETH H. STEVENSON
	ELIZA JANE NICHOLSON	INLAND CHIEF			KEYSTONE CANYON
	ELMER A. SPERRY	IRRIGON			KEYSTONER
	ELWELL	ISLAND MAIL			KISKA TAE 35
	EMPIRE STATE	J.L. LUCKENBACH			KITTANNING
	ERRIA	JAMES A.C. TAIT			KYSKA
	EURYMEDON	JAVA MAIL			LANAI
	EVERGREEN STATE	JEAN NELSON			LIBERTY BELL
	F.E. WEYERHAEUSER	JOEL CHANDLER HARRIS			LION OF CALIFORNIA
	F.J. LUCKENBACH	JOHN W. BURGESS			LNBD-10
	F.J. SUPER FRAN BRADACH	JOHN W. POWELL			LUBE QUEST
	F.S. BELL	JOHN WEYERHAEUSER			MANUKAI
	FELIX RIESENBERG	JOSEPH FEUER			MANULANI
	FERDINAND WESTDAHL	JUPITER			MARTIN
	Ferry Tourist #3	JUPITER INLET			MAUNALEI
	FIGHTER	KLICKITAT			MAURY
	FLORA C.	KNAPPTON			MERCER
	FLORENCE	KOKUA			METROPOLIS
	FLORENCE LUCKENBACH	KYMA			MICHIGAN
	FLYING EAGLE	KYSKA			MISPILLON
	FORT HASKINS	LA SALLE			MOBIL ARCTIC
	FORT VANCOUVER	LELAND JAMES			MOBIL MERIDIAN
	FRED C. AINSWORTH	LENA LUCKENBACH			MOHAWK
	FREDERICK BOUCHARD	LEON GODCHAUX			MOKU PAHU
	FRIBOURG TRADER	LIBBY ISLAND			MOKUPAPA
	GARDEN STATE	LINFIELD VICTORY			MOLOKAI
	GENERAL A.E. ANDERSON	LOMALAND			MONTICELLO
	GENERAL A.W. GREELY	LONE STAR STATE			MT. VERNON
	GENERAL BLATCHFORD	LSM 84			NAVIGATOR
	GENERAL C.H. MUIR	LST 1048			NAVITEK I
	GENERAL LEROY ELTINGE	LST 1064			NECENICUM
	GENERAL M.C. MEIGS	LST 1066			NESTUCCA
	GENERAL M.L. HERSEY	LST 825			NEWCASTLE VICTORY
	GENERAL W.A. MANN	LST 900			NIEUW AMSTERDAM
	GENERAL W.M. BLACK	LST 975 (MARIAN COUNTY)			NILOS
	GENERAL WILLIAM WEIGAL	LUMBER CARRIER			NOORDAM
	GEORGE B. KELEZ	MADAKET			NORHTERN HAWKER
	GEORGE BIRNIE	MAGNOLIA STATE			NORTHERN LIGHT
	GEORGE D. PRENTICE	MAHOPAC			NUMBER 4
	GEORGE LUCKENBACH	MANETTE			OBSERVATION ISLAND
	GEORGE M. BROWN	MANGARELLA			OCEAN SERVICE

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	GEORGE WALTON	MANZANILLO			OREGON
	GERONIMO	MARBERTO CAPAY			OREGON MAIL
	GILLIGAN (DE 508)	MARGARET SCHAFER			OTIS E. HALL
	GLADIATOR	MARGO			OVERSEAS BOSTON
	GO GETTER	MARY LUCKENBACH			OVERSEAS CHICAGO
	GOLDEN STATE	MASTODON			OVERSEAS JUNEAU
	GREEK ISLE	MCCURDY			OWEN WISTER
	GREEN MOUNTAIN STATE	MIAMI			PACIFIC
	GRIFONE	MIKIONA			PACIFIC EXPLORER
	GROVE CITY VICTORY	MISSION SAN FERNANDO			PACIFIC FALCON
	GUARDSMAN	MONTANA			PATHFINDER II
	Gunderson Bros. Barge	MORMACMAR			PAUL BUCK
	H.H. RAYMOND	MULTNOMAH			PECOS
	H.W. MCCURDY	NATOMA			PENNSYLVANIA
	HAI HUNG	NEZ PERCE			PETER S. HASS
	HARDING	NICHIYO MARU			PHILLIPS CALIFORNIA
	HARRIET	NORTH BEACON			PIERRE VICTORY
	HARRY LUCKENBACH	OCEAN MAIL			PLATTE
	HARRY LUNDEBERG	OCEAN ULLA			POINT DEFIANCE
	HAWAII	OLYMPIC PIONEER			POLAR SPIRIT
	HAWAIIAN CITIZEN	OREGON			PONTUS H. ROSS
	HAWAIIAN FORESTER	OREGON MAIL			PORTLAND
	HAWAIIAN TRADER	OREGON PINE #3			PRINCE WILLIAM SOUND
	HECTOR R 7	ORIZABA			PRINCESS DIAN
	HENDERSON	OTSEGA			PROSPERITY
	HENRY FOSS	OVERSEAS HORACE			QUINALT
	HENRY M. STEPHENS	P & T VOYAGER			RANGER
	HERBERT D. CROLY	PACIFIC			RESOLUTE
	HERCULES	PACIFIC LADY			RIO DA LUZ
	HIRAM S. MAXIM	PANAMAN			ROGERS
	HONG KONG TRANSPORT	PELICAN STATE			ROGUE
	HORACE IRVINE	PERMANENTE CEMENT			ROTTERDAM
	HORACE LUCKENBACH	PERMANENTE SILVERBOW			SAGAFJORD
	HUDSON	PETER J.			SALVAGE CHIEF
	HURRICANE	PETER W.			SAN ANTONIA
	HYDE	PINE BLUFF VICTORY			SANDY
	ILLINOIS	POAC			SANSINENA II
	INAGUA	POINT LOMA			SANTA ALICIA
	INDIA MAIL	PORTLAND			SANTA ANITA
	INGER	PORTLAND TRADER			SANTA ELIANA
	INLAND CHIEF	PURPLESTAR			SAVVAS
	INVADER	PVT. NANTI J. FIORL			SEA CLOUD
	IRAN VICTORY	PVT. SHARPE			SEA FAN
	IRENESTAR	QUEMADO LAKE			SEA FARER
	IRRIGON	QUENETT			SEA JADE
	ISAAC VAN ZANDT	RACQUETTE			SEA KITTIE
	ISLAND MAIL	RAMONA #5			SEA-LAND ANCHORAGE
	J. WHITNEY	RAMONA #8			SEALIFT ANTARCTIC
	JACOB LUCKENBACH	RAMPANT			SEALIFT CHINA SEA

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	JAMES W. CANNON	RIVER QUEEN			SEALIFT INDIAN OCEAN
	JAPAN MAIL	ROBERT GRAY			SESNOGORSK
	JAVA MAIL	ROBERT LUCKENBACH			SHAVER
	JEAN LAFITTE	ROBIN			SIERRA
	JEREMIAH S. BLACK	RUBYSTAR			SIERRA MADRE
	JERMIAH S. BLACK	SAIPAN			SILAS BENT
	JOHN B. WATERMAN	SALVAGE CHIEF			SINGA SUN
	JOHN CROPPER	SAMPSON			SIOUX FALLS VICTORY
	JOHN FAIRFIELD	SANIBEL ISLAND			SOHIO INTREPID
	JOHN H. QUICK	SEA WIND			SOPHIE C.
	JOHN HATHORN	SEAMONITOR			STAR MONTANA
	JOHN HOWLAND	SEASPLENDOR			SUPER BOOSTER
	JOHN M. SCHOFIELD	SELMA VICTORY			SURVEYOR
	JOHN MERRICK	SEMINOLE			TAI SHING
	JOHN OWEN	SONOMA			TALL BUCK
	JOHN T. MCMILLAN	STEEL EXECUTIVE			TASMAN SEA
	JOHN W. BURGESS	SUN HAWK			TAZLINA
	JOPLIN VICTORY	SURNA			TEX
	JOSEPH FEUER (ex. ALBION)	SYOSETT			TICONDEROGA
	JOSEPH SQUIRES	TARLETON BROWN			TITAN
	JOSHUA SLOCUM	TD 71			TOPA TOPA
	JULESBURG	TD 72			TOTEM
	JULIA LUCKENBACH	TEXAS			TRANS HARTFORD
	JUMPER HITCH	TIDEWATER SHAVER			TRANS ORLEANS
	KATHERINE	TIGER			TUSTUMENA
	KATHERINE B. SHERWOOD	TILLAMOOK			TYCOM RELIANCE
	KEITH	TITAN			UNION VICTORY
	KENAI	TRANSUNION			UNIVERSE EXPLORER
	KENYON VICTORY	TRASK			UTRILLO (ex AMERICAN MERLIN)
	KLICKITAT	TUALATIN			VANDENBERG
	KOKOHEAD	Tug 890			VENETIA
	KRONVIKEN (Norw.)	TYEE			VENTURA
	KYSKA ISLAND (Barge 537)	UMPQUA			VIKING QUEEN
	LAKELAND VICTORY	VAN LOON			VIKING SERENADE
	LANE VICTORY	VOLUNTEER STATE			W.L. WILLIAMS
	LELAND JAMES	VULCAN			WARRIOR
	LENA LUCKENBACH	WAHKIAKUM			WASHINGTON
	LEON GODCHAUX	WALNUT (W-252)			WASHNGTON TRADER
	LEROY ELTINGE	WASHINGTON			WATER PRINCE
	LEWIS J. EMERY JR.	WAYNE VICTORY			WHEELING
	LIBERTY FLAG	WESTERN			WHITE
	Liberty Hull	WESTERN COMET			WILLAMETTE CHIEF
	LINFIELD VICTORY	WESTERN MARINER			WILLIAM CARSON
	LOMA VICTORY	WHEATLAND			WILLIAM H. STANDLEY
	LONDONER	WILLIAM T. ROSSELL			WILLIAM PATTERSON
	LONG LINES	WILLAMETTE			WILLIAMSBURGH
	LONGVIEW VICTORY	WILLIAM LUCKENBACH			WOODSTOCK VICTORY
	LSIL 655	WILLIAM T. ROSSELL			YAQUINA
	LSM (R) 412	WILLIAMS			YPATIA HALOOSIA

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	LSM 212	WINQUATT			Z BIG ONE
	LSM 320	WOOD ISLAND			
	LSM 343	WYOMING			
	LSM 474	YAKIMA			
	LSM Hull	YUKON			
	LSSL 700	ZEUS			
	LST 1129				
	LST 583				
	LST 786				
	LST-209				
	LUCKIAMUTE				
	M.M. DANT				
	MAGNOLIA STATE				
	MAHLON PITNEY				
	MAHOPAC				
	MALASPINA				
	MARCOS				
	MARGARITIS				
	MARINE FLIER				
	MARINE LEOPARD				
	MARINE LYNX				
	MARINE RUNNER				
	MARIPOSA				
	MARSHFIELD VICTORY				
	MASSMAR				
	MATANUSKA				
	MATHEOS				
	MATTAWUNGA				
	MCNAUGHTON				
	MEADOWBROOK				
	MEADOWBROOK				
	MICHIE				
	MIDDLESEX TRADER				
	MIDSECTION				
	MIKIOI				
	MILL SPRING				
	MILLICOMA				
	MIRENE				
	MISSION DOLORES				
	MISSION PURISIMA				
	MISSION SAN DIEGO				
	MISSION SAN FERNANDO				
	MISSION SAN GABRIEL				
	MISSION SANTA BARBARA				
	MISSION SANTA YNEZ				
	MOKUPAPA				
	MONGABERRA				
	MONTANA				
	MONTEREY				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock 1	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	MONTICELLO				
	MORMACREY				
	MORMACSUN				
	NAECO				
	NAPO				
	NATOMA				
	NAVAJO VICTORY				
	NEW WORLD VICTORY				
	NEW ZEALAND VICTORY				
	NEWCASTLE VICTORY				
	NEZ PERCE				
	NICKY				
	NORCUBA				
	NORTH BEACON				
	NORTH LIGHT				
	NORTH QUEEN				
	NORTHWIND				
	OCCIDENTAL VICTORY				
	OCEAN CARRIER				
	OCEAN MAIL				
	OCEANSTAR				
	OLD COLONY MARINER				
	OLD DOMINION STATE				
	OLEUM				
	OLIVER J. OLSON				
	OLIVER J. OLSON III				
	ONDAGA				
	ONONDAGA				
	OREGON				
	OREGON (ex ROBIN)				
	OREGON MAIL				
	OREGON TRADER				
	ORIZABA				
	ORLECK				
	OSCAR S. STRAUS				
	OTIS E. HALL				
	OTSEGA				
	OWEN WISTER				
	P & T ADVENTURER				
	P & T PATHFINDER				
	P & T SEAFARER				
	P & T TRADER				
	PACIFIC				
	PACIFIC CARRIER				
	PACIFIC COURIER				
	PACIFIC EXPLORER				
	PACIFIC TRADER				
	PACIFICUS				
	PACKING				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	PARGO 264				
	PATRICIA				
	PAULINE				
	PC 1244				
	PEACH TREE STATE				
	PEMBINA				
	PERMANENTE CEMENT				
	PERMANENTE SILVERBOW				
	PERRYVILLE				
	PETER W.				
	PG #98				
	PHILIPPINE MAIL				
	PHILLIPS CALIFORNIA				
	PHILLIPS WASHINGTON				
	PIERRE VICTORY				
	PIETRO ORSEOLO				
	Piggyback Unit				
	PINE BLUFF VICTORY				
	POINT ARGUELLO				
	POINT DEFIANCE				
	PORTLAND TRADER				
	PRUDENTIAL OCEANJET				
	PVT. JOE E. MANN				
	QUENETT				
	R.G. FOLLIS				
	R.L. BOB SESSLERS				
	RACHEL V				
	RACQUETTE				
	RAMPANT				
	REBEL				
	RED OAK VICTORY				
	REEF KNOT				
	RELAX				
	REMBRANDT				
	RICHARD M. PEARSON				
	RIVIERA				
	ROANOKE				
	ROBERT E. CLARKSON				
	ROBERT GRAY				
	ROGERS				
	ROGUE				
	ROMULUS				
	ROSE KNOT				
	RUBT XI				
	RUTGERS VICTORY				
	SALVAGE CHIEF				
	SAMOA BEAR				
	SANDLAKE				
	SANIBEL ISLAND				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	SANTA ANA				
	SANTA ANITA				
	SANTA MARIA				
	SANTA PAULA				
	SCHUYLKILL				
	SEA GALE				
	SEA VICTORY				
	SEACLIFF				
	SEACORONET				
	SEAFAIR				
	SEAFAITH				
	SEAHERALD				
	SEAMONITOR				
	SEASPLEANDOR				
	SEASTAR				
	SEATTLE				
	SELMA VICTORY				
	SENECA				
	SEVEN SEAS				
	SGT. JACK J. PENDLETON				
	SHAVER				
	SHAWNEE TRAIL				
	SHERBURNE (victory)				
	SIEGFRIED EAGLE				
	SIERRA				
	SIOUX				
	SIOUX FALLS VICTORY				
	SOUTH BEND VICTORY				
	SPIRIT OF LIBERTY				
	STAR NADINE				
	STEAMER PORTLAND				
	STEEL SURVEYOR				
	SULPHUR MINES				
	SWARTHMORE VICTORY				
	SWORD KNOT				
	SYLVANIA				
	SYOSETT				
	TALLULAH				
	TARANGER				
	TARLETON BROWN				
	TD 71				
	TENACIOUS				
	TEXACO CALIFORNIA				
	TEXACO NEW JERSEY				
	THOMAS BULFINCH				
	THOMAS FITZSIMMONS				
	THOMAS NUTTALL				
	TICONDEROGA				
	TIDEWATER SHAVER				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	TILLAMOOK				
	TIMBER HITCH				
	TITAN				
	TOPA TOPA				
	TRANSAMERICAN				
	TRANSERIE				
	TROLLEGGEN				
	TULLAHOMA				
	TYEE				
	TYEE & HERCULES				
	UPC (TTC) 1180				
	UPC 1079				
	VAASA				
	VALIANT				
	VANTAGE HORIZON				
	VOLUNTEER STATE				
	W.H. PEABODY				
	W.L. MCCORMICK				
	WALTER COLTON				
	WALTER RICE				
	WALTHAM VICTORY				
	WASHINGTON				
	WASHINGTON MAIL				
	Water Barge for Dredge				
	WATERTOWN				
	WAYNE VICTORY				
	WESTERN				
	WESTERN COMET				
	WESTERN METEOR				
	WHITE				
	WHITE BUSH				
	WIDEAWAKE				
	WILLAMETTE CHAMPION				
	WILLAMETTE TRADER				
	WILLIAM ALLEN WHITE				
	WILLIAM CODDINGTON				
	WILLIAM E. CHANNING				
	WILLIAM GLACKENS				
	WILLIAM H. CLAGETT				
	WILLIAM H. PEABODY				
	WILLIAM H. WILMER				
	WILLIAM L. MCLEAN				
	WILSHIRE BOULEVARD				
	WINQUATT				
	WINSLOW HOMER				
	WYOMING				
	XAVIER VICTORY				
	Y-64				
	YAKA				

APPENDIX G
SHIPS REPAIRED 1950-1995
SUPPLEMENTAL PRELIMINARY ASSESSMENT
PORT OF PORTLAND - SWAN ISLAND UPLAND FACILITY

Contractor	Facility				
	Navy Dry Dock	Dry Dock 2	Dry Dock 3	Dry Dock 4	Other
Not currently known (continued)	YAKIMA				
	YAQUINA				
	YMS KATHY JO				
	YOCONA				
	YORKMAR				
	YOUNG AMERICA				
	YTB 381				
	YUKON				
	YVONNE				